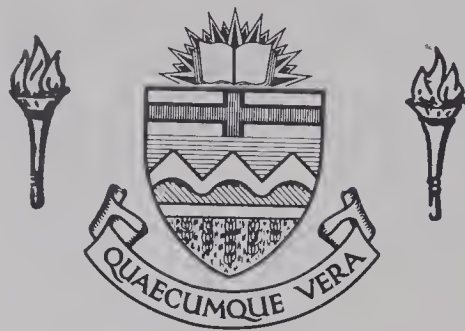


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ADULT DEVELOPMENT IN RELATION
TO TEACHER PROFESSIONAL DEVELOPMENT

By



Joyce B. Kryswaty

A THESIS

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The undersigned certify that they have read, and
recommend to the Faculty of Graduate Studies and Research,
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. Adult Development in Relation
. to Teacher Professional Development
submitted by Joyce B. Kryswaty
in partial fulfilment of the requirements for the degree of
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This volume is dedicated to Pamela and Lisa
who taught me the essence of 'developmental
psychology'.

ABSTRACT

The study was stimulated by the observation that, theoretically, there appears to be a basic congruence, or at least a basic compatability, between characterizations of psychological maturity and characterizations of teacher professional maturity and descriptions of 'ideal' teacher types. Based upon the assumption that the currently desirable 'self-renewing' teacher may well be the individual who has attained a relatively high level of development on both the psychological (as defined by structural theory) and on the professional development continua, a field study was undertaken to explore the interstices between states of progression on these two continua. The goal was as much to generate hypotheses as it was to confirm or question theoretical positions.

Specifically, the intent of the study was threefold:

(1) To investigate (describe) residual relationships (a) between scores obtained on purported measures of cognitive structural development, i.e. Conceptual Level (CL) as defined and indexed by Hunt (1971b; Hunt et al., 1977), and moral judgment scores as defined and indexed by Kohlberg (1973); (b) between CL scores and teacher development scores (TC) as the latter are defined and indexed by Fuller and her associates (1969, 1972); and (c) between scores as obtained in (b) and scores purported to index teaching style (RI) as defined by Joyce and Harootunian (1967).

(2) To investigate the relative efficacy of a teacher socialization program ('Teacher Enrichment Experience'), designed in accord with the Hunt model (1972), as compared with a simple 'Hawthorne-expectancy' treatment with respect to inducement of cognitive structural elaboration and progression in level of teacher development and the relation of selected demographic variables to pre-post performance.

(3) To discern and describe group profiles based upon the variables central to the study.

The field study involved, sequentially, the pre-treatment collection of data from two groups of 'select' teachers who had been specifically recruited for each treatment, engagement in the treatment programs which spanned the course of a school year, and post-treatment data collection. Data were analyzed quantitatively and qualitatively.

Major findings (and conclusions) of the study were as follows:

Residual characteristics

The residual psychological level, as indexed by both PC/CL and MJ, was found to be low, comparatively, whereas the level of teacher development was found to be more reflective of a 'select' group. Few exemplars of teachers who had attained a high level of development on both the PC/CL and TC scoring continua were found.

Residing relationships

Although there existed a significant positive relation between PC and MJ scores there was an absence of the theoretically expected high level stage correspondence.

The pattern of relationship between PC/CL and TC scores was one of increasing TC level with increasing CL through CL₃. There appeared to be no consistent relationship pattern between reflectivity in teaching, as indexed by RI scores, and CL.

Treatment efficacy

The 'Hawthorne-expectancy' treatment group evinced a superior pre-post performance with respect to CL progression than did the 'Teacher Enrichment Experience' group. The potency effect held across CL groups.

Whereas the 'Hawthorne-expectancy' group recorded no observable

progress on the TC dimension, the 'Teacher Enrichment Experience' group did record an increment in development, although not of statistical significance.

The 'Teacher Enrichment Experience' group recorded a significant pre-post RI increment.

Factors relating to PC/CL and TC performance

Area was found to interact with PC and RI pre-post performance but not with TC performance. Course recency and age were also found to interact with PC and TC performance. In view of sampling biases these factors merit further investigation.

Age-stage and performance

Age profiles for psychological development (CL) appeared not to differ but in the area of professional development age appears to be a meaningful variable. The pattern evinced showed a comparatively low level of development for Age1 (20-29 years), a rapid peaking for Age2 (30-39 years) and a progressive decline thereafter (40-49, 50 years plus).

Hypotheses and implications, with respect to both theory and practice, were advanced. The discussion concluded with the presentation of a model for the coordination of staff and institutional development.

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CHAPTER I

INTRODUCTION AND OVERVIEW OF THE STUDY PLAN

The study reported herein was stimulated by the observation that theoretically there appears to be a basic congruence between characterizations of psychological maturity, as advanced by developmental psychologists and personologists, and characterizations of teacher professional maturity, as advanced in recent educational literature. Similarly, there would appear to be an observable theoretical relation between maturity as characterized on these two continua and proposed attributes of 'ideal' teacher types as explicated by studies of teacher effectiveness and by prominent educators. In short, there would appear to be some overlap between the areas of person or psychological developmental maturity and teacher professional maturity. Such a posited relationship would seem intuitively reasonable in that to be an 'effective' teacher in today's schools would seem to require a certain degree of maturity. In view of the relative recency of theoretical advance and instrumentation in both the fields of adult development and teacher development, it not surprising that virtually no attention has been directed toward a verification and explication of such a posited relationship. Investigations directed toward this end should yield information with respect to the popular and important question: Are 'good' teachers born (naturals) or are they made or are they both? It is toward this end--toward an exploration of the interstices between the state of progression toward psychological maturity and teacher professional maturity that the study reported herein was directed.

Until recently adults have been viewed in a relatively undifferentiated manner; only within the last decade has adult development become a concentrated field of study. Some theorists have sought to describe

adulthood in terms of psychosocial ages and to identify periods of stability and change therein (Buhler & Messarik, 1968; Gould, 1975; Levinson, 1978; Lowenthal, Thunher, Chiriboga, & Associates, 1975; Sheehy, 1976; Vaillant, 1977). Another approach is afforded through structural theories of personality development (Harvey, Hunt, & Schroder, 1961; Kohlberg, 1973; Loevinger, 1966; Sullivan, Grant, & Grant, 1957). The latter approach, in particular the Conceptual Systems model (Harvey et al., 1961; Hunt, 1971b) and the Moral Judgment model of Kohlberg (1973), by virtue of their synthesizing and accommodative nature and their adequacy in terms of built-in change models and accompanying instrumentation, would appear to be potentially useful in the empirical study of adult psychological development. A comparison of the Hunt and Kohlberg cognitive structural models with other structural developmental models--ego and interpersonal competence--and with the more descriptive age-stage models suggests relationships across areas and stages. Such relationships have also been noted by Chickering (1976), Knox (1977), and Loevinger (1976). Although such relationships remain yet hypothetical they may well be the genesis of a more comprehensive theory of adult development.

Results of studies suggest that few adults reach maturity in terms of their potential for development (Harvey et al., 1961; Kohlberg, 1973; Maslow, 1954). Thus there appears to be a generally accepted need to investigate ways of actualizing the adult potential for development.

Although relatively little is presently known about the process of change and development in adults, there appears to be a consensus among theorists that experience (environment) is an important component in the process (Flavell, 1970). Further, it has been proposed by students of adult socialization that the more personal or self-initiated the experience,

the greater is its potential for effecting change (Brim, 1968). Increasing awareness of the intimate role that occupation plays in the psychological life of the adult (Argyris & Schon, 1974; Hall & Morgan, 1977; Herzberg, 1966; McGregor, 1960) has stimulated interest in examining the potential of the occupation and of occupational socialization in the facilitation of individual development (Hershey & Blanchard, 1972). The parallelisms noted between models of occupational development (stage and person) and the age-stage and structural psychological models referred to earlier invite attention. In that teaching by its very nature would seem to involve a very intimate relation between the person and the occupation, teacher socialization should constitute a potentially good context in which to study and effect change and development in adult subjects.

A similar trend to that observed in adult study and occupation study is witnessed in the study of teacher performance. The commonly held conception that following an intensive period of anticipatory socialization teachers (like butterflies) emerge 'full-blown' is being challenged by an 'emerging' conception of teacher competence. Toward this end Fuller (1969) and Katz (1972) have elaborated stage models of teacher development. Of intrinsic interest to this study is the observation that those characteristics proposed to define teacher developmental maturity are most compatible with characteristics of 'ideal' teachers and with those characteristics proposed to define psychological maturity.

In part as a reflection of this new teacher development orientation along with the observation that the teacher population exhibits few exemplars of the 'ideal' teacher type and coupled with concern with respect to the increasing threat of obsolescence, educators are beginning to propose that teacher socialization programs be growth oriented toward the goal of producing 'self-renewing' teachers (Jackson, 1971; Horton & Horton, 1974).

If the observations with respect to the overlap of effective teacher developmental characteristics with characteristics of psychological maturity are empirically veridical then it would seem that optimizing psychological maturity might be related to optimizing teacher development toward the end of producing a 'self-renewing' teacher.

There appears then to be an expressed concern for optimizing both adult and teacher development. There is reason to believe that teacher socialization may be a potent context for such a purpose. Such a rapprochement between these two aspects of psychology and education has been of some concern to Hunt (1971b, 1977). Toward this goal a small, germinal body of theory and research has accumulated.

The orientation of changing the individual through intervention socialization, so prevalent in the psychological and educational literature, places maximal confidence in the power of the adult to transcend any contextual limitations of his work space. The study reported herein was commenced upon this assumption but behavioral feedback from the subjects being subjected to such socialization called attention to the probable tenuous nature of such a position. Support for such a concern was found in the sociological literature and in the content area of Organizational Development (OD). Models of organization structures--in particular, the two polar models of professional practice and interpersonal relationships articulated by Argyris and Schon (1974) and the 'mechanistic-organismic' continuum of Owens and Steinhoff (1976)--suggest that the practice of personal developmental arrest is possibly built into many of our societal institutions, certainly the school as it presently exists. Thus it would seem that the character of the institutional structure must be considered as an important factor when assessing potential for individual development within institutions.

As originally conceived, it was the general purpose of this study to explore the virtually unexplored interstices between the state of progression toward psychological maturity and the state of progression toward teacher professional maturity. The goal was as much to generate hypotheses as it was to confirm or question theoretical positions. More specifically, the intent of the study was threefold: (1) To investigate (describe) residual relationships between and among scores obtained on purported measures of cognitive structural characteristics (conceptual level and moral judgment level), measures of level of teacher development, selected teaching behavior, and selected demographic characteristics; (2) To investigate the relative efficacy of a teacher socialization program, designed in accord with psychological development theory, in relation to structural elaboration (cognitive structural development) and progression in level of teacher development; and (3) To discern and describe group profiles based upon the variables central to the study.

In view of the logistics of sampling the nonequivalent control group design (Design 10) of Campbell and Stanley (1963), although less desirable, was considered the most feasible. However, the exigencies of the situation precluded the possibility of recruiting a comparison group in the same manner as the program group had been recruited. Recruitment procedures utilized with respect to the second group do not justify an assumption of 'no treatment' but rather this group must be considered to have received a 'Hawthorne' type treatment. Such procedures also limited the opportunity to assess the role of situational variables. However, the amenities of the research situation precluded the same comprehensive testing of the second group as was possible with the program group.

Clearly the rationale of the study, including basic assumptions, was derived directly from the literature of psychology, education, social

psychology, and sociology. Thus it is to a more detailed discussion, evaluation, and synthesis of perspectives that attention in this report is now directed.

CHAPTER II

THEORETICAL AND EMPIRICAL EXPOSITIONS

The rationale and basic assumptions of the study reported herein were derived from a consideration of the literature with respect to the following areas: (a) psychological conceptions of maturity and developmental models of adulthood; (b) occupation and occupational socialization in relation to personality development and the development of competence; (c) the occupational ethos of teaching and the teachers, teacher socialization and the emergence of competence; and (d) the coordination of psychological development and teacher development.

Conceptions of Maturity

and Developmental Models Encompassing Adulthood

Conceptions of maturity derive from both the formulations of personologists and developmental psychologists. The following constitutes a selective discussion of relevant formulations.

Fulfillment Models

Fulfillment theorists are concerned with the inherent tendencies of the organism which when unimpeded eventuate in psychological growth.

Rogers. A classical theorist in this area, Rogers (1959) conceives of an inherent pressure within the organism which moves him toward becoming whatever is inherent in his nature. In humans this tendency is termed 'self-actualization' and is defined as "the pressure to behave and develop --experience oneself--consistently with one's conscious view of what one is" (Maddi, 1968, p. 74). The sense of self, according to Rogers, is socially determined through interaction with others. Every person has an innate need for positive self-regard as well as positive regard from others, a situation which sometimes leads to conflict with his self-actualizing

tendencies (Rogers, 1961). To the extent that one distorts or denies his experiences because they conflict with his need for love and positive regard of others, his self-actualizing tendency is hampered and positive growth is impaired (Maddi, 1968).

The fully-functioning person, according to Rogers (1961) is characterized by an openness to experience, 'existential' living, organismic trust, and creativity.

Maslow. Like Rogers, Maslow (1954, 1968) believes that man has an innate motive to actualize himself, to realize his potentialities. However, man also has a more basic need, the need to ensure physical and psychological survival. These lower needs must be satisfied before the higher needs, the self-actualization or life enhancement needs, can strongly emerge. The higher one is able to proceed up the need hierarchy, suggest Maddi and Costa (1972), "the more individuality, humanity, and psychological health he will have".

It is the feeling of Maslow that self-actualization occurs only rarely and then usually in older persons. He observed self-actualizers to be characterized by: a realistic orientation; an acceptance of self, others, and the world; a spontaneity and straightforwardness in approach; high task orientation (rather than self-preoccupation); a sense of privacy; independence; appreciativeness; a spirituality (not necessarily religious); an identification with mankind; and feelings of intimacy. Additionally, such people tend to hold democratic values, are able to distinguish between means and ends, possess a marked sense of humor, are creative, and are non-conformists (Maslow, 1954).

White. 'Competence' motivation--the attempt to achieve competence in one's functioning--is for White (1959) the innate core tendency of personality. Similar to Maslow's higher needs, competence motivation refers to

pursuits that enhance life, and strong survival needs likewise are held to curtail competence motivation. In order to achieve fulfillment, according to White, man must seek competence and experience some measure of success in this search.

Allport. Somewhat like Maslow, Allport (1961) recognizes two inherent tendencies of man: functioning in a manner expressive of the self--proprieate functioning, and functioning to satisfy biological needs--opportunistic functioning. It is proprieate functioning which serves an organizing and integrating role and is an impetus to psychological growth. Different functions of the proprium (self) emerge at different ages and are modified throughout life in the direction of greater differentiation and integration (constituting growth). During development, given an environment not punitive or depriving, opportunistic functioning recedes in importance. Development continues into adulthood and, normally, signs of maturity are concomitant. Criteria of maturity, according to Allport (1961, pp. 283-304), include: extension of the sense of self (ego involvement, commitment); warm relation of self to others; emotional security (self-acceptance); realistic perception with respect to skills and assignments; self-objectification; insight and humor; and a unifying philosophy of life.

Thus, according to the fulfillment theorists, functioning in accord with 'enhancement' needs--the impetus to psychological growth--is contingent upon an unimpeding, supportive environment. With respect to change over the life span, Maddi (1972) summarizes their position in these words:

When they consider the entire life-span, fulfillment theorists think in terms of a fairly continual developmental process such that personality changes throughout childhood, adolescence, and adulthood. The changes are generally considered to indicate progressively greater differentiation and integration, or psychological growth, at least when conflict and defense do not interfere. (p. 185)

The Course of Life: Seminal Theories

Freud. Although Freud posited no adult stage of development, his emphasis being on stability of personality after biological maturity, it is toward an understanding of adult functioning that Freud makes contribution. Firstly, according to Freud, early experiences form the foundation for the development of many personality traits which continue into adulthood. Secondly, his conceptions of two nonhealthy personality states--regression and fixation--have been of great significance in explaining less-than-mature functioning. Regression refers to a return to an earlier stage of psychosexual development and usually results from extreme physical or emotional stress. Fixation refers to arrested development, a result presumably of "an overinvestment of libido, which has come about through excessive gratification or deprivation and frustration of the person's needs" (Levy, 1970, p. 151). When fixation or regression occurs the individual's attitudes and behavior become dominated by the concerns and interests characteristic of the associated less-than-mature stage. The third significant contribution is that which is a basic assumption of psychoanalysis--

Almost as blocked-up plumbing can be 'freed up' with Drano, when emotional difficulties are worked out during therapy, cognitive activity is 'freed up' so that the patient typically experiences a new capability to deal effectively with the world around him. (Rappoport, 1972, p. 69)

Jung. Like the fulfillment theorists, Jung believed that a prime motivating force in personality is to realize one's potential. The aim of a healthy personality is to achieve a kind of wholeness in which all parts of the personality are fully developed and harmoniously integrated. A key concept in this process, according to Jung (1933) is individuation (inter and intra system differentiation).

In one of the earliest theoretical life-stage formulations, Jung con-

conceived of two stages encompassing the period of adulthood. The first stage, youth (puberty to 35 or 40 years of age), was viewed as primarily involving an adjustment to reality and a widening of "the horizon of life". Characteristics of the period include: "sexual values, ascendent vital processes, physical energy, extraversion, impulse, vigor, and passion, along with a degree of dependence as the self is established in family and community" (Knox, 1977, p. 329). The second period, commencing at about age forty, was seen to involve a major change which seemingly arises in the unconscious and eventuates in either the emergence of new traits or the hardening of one's previous convictions and principles (Jung, 1933, pp. 12-13). Individuals at this stage are characterized as "less biological, vigorous, and impulsive and are more cultured and introverted. Self-actualization occurs as values are reevaluated, physical energy is displaced by psychic energy, vigor is replaced by wisdom, and the individual is transformed into a spiritual man" (Knox, 1977, p. 329).

Buhler. Based upon a systematic study of biographies collected during the 1930's in Vienna, Buhler drew a parallel between the biological process of growth, stability, and decline and the psychosocial process of expansion, culmination, and contraction of endeavors. The two curves may not necessarily coincide; the biological curve might well precede an individual's psychosocial curve (Kimmel, 1974).

Later work by Buhler (1968) emphasized goal setting and the concept of self-fulfillment in the developmental sequence of life. During the first two decades goals are gradually established and lead, ideally, to self-fulfillment during the middle years. Frequently a reassessment of goals occurs at about age 40 to 45 and a subsequent striving for these new goals may occur before a shift to stability.

Kuhlen (cited in Kimmel, 1974), in a further elaboration of Buhler's

work, suggests that the growth-expansion motives of the fulfillment theorists seem to dominate the first half of life and result in an active, direct gratification of needs whereas with increasing age there is a shift to more indirect and vicarious gratifications. Such a shift may occur as a result of satisfaction of earlier needs which then allow for the emergence of other needs, or "it may result from physical or social losses, from the sense of being 'locked into' a situation or even from the changing time perspective that results from having lived over half of one's life" (Kimmel, 1974, p. 20).

Erikson. Often credited as the first comprehensive theory of the life span is Erikson's 'Eight Ages of Man' (Erikson, 1950, 1972). It is with the psychosocial development of the ego and ego identity that Erikson addresses himself. Development is characterized as a succession of interactional imbalances within the individual's personality structures and the environmental milieu (psychosocial crises). These conflicts, perennially present, become dominant at certain points and thus define stages. The stages are presented in the form of an 'epigenetic' chart (see Figure 1). Successful adjustment (readjustment) at each critical step leads to (a) a change in personality structures such that the person interacts differently with the environment in the future (although new imbalances and crises will occur) and (b) feelings of efficacy and confidence in the face of new challenges (Langer, 1969). Failures at one stage can be rectified by successes at later stages.

Addressing attention to the advanced levels of development, one notes the importance of successful stage 5 resolution--a sense of identity--as prerequisite to the successful resolution of the young adult crisis, 'intimacy versus isolation'. In order to establish intimacy with oneself (with one's inner life) and to develop the ability to share with others,

one must have some sense of who he is, where he has been, where he is going. If the individual learns to relate to others, he later becomes interested in establishing and guiding the next generation (stage 7); if not, he becomes self-centered and experiences a "pervading sense of stagnation and interpersonal impoverishment". Accrued ego integration leads to wisdom; marked deficit leads to despair, displeasure, disgust (stage 8).

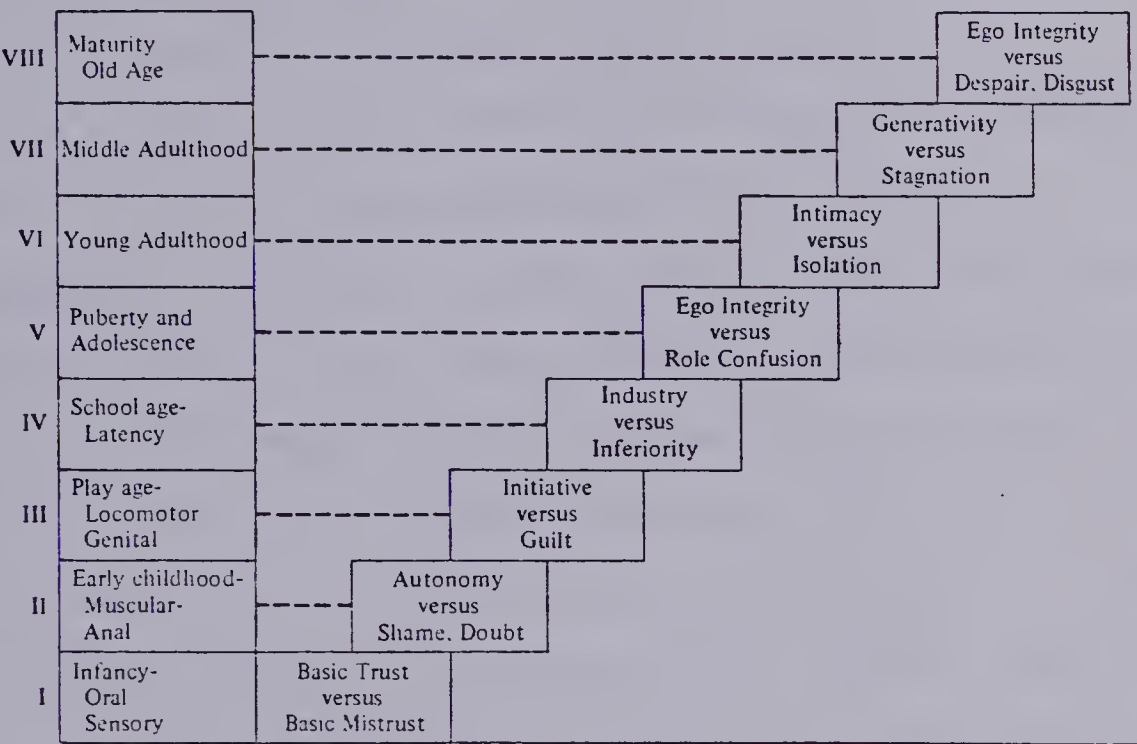


Figure 1. Epigenetic matrix of Erikson's 'Eight Stages of Man'.
(Adapted from Erikson, 1972, p. 30.)

Failure to progress to the final stages is not uncommon. Fixation or refusal to change or face crises can occur either through the process of foreclosure (denial of crisis) or in the form of a prolonged moratorium (inability to resolve crisis). Both processes arrest development and result in behaviors typical of earlier stages.

The aforementioned theorists served to call attention to potentially salient transitions and behaviors in adulthood. While Freud served to heighten awareness of developmental arrest and the possibility of un-arresting development, Jung and Buhler charted a path for psycho-social

(life-style, age-stage) descriptions of life passage, and the more structural view of Erikson served as a precursor of ensuing structural ego and interpersonal competence theories. Attention in this review will now be directed toward these two approaches to adulthood, commencing with the life-style formulations.

Adult Life-Style Theorists

The last decade has witnessed a surge of interest in the study of adult life styles. For the purposes of this exposition, attention will be focussed on the period which encompasses the working years.

Neugarten. The role of age as a marker of stage is well articulated by Neugarten (1968). On the basis of data from the Kansas City study, which included 700 subjects between the ages of 40 and 90 years, Neugarten proposes that the content aspects of personality (the relatively external aspects) remain relatively stable across adulthood whereas the process aspects appear to change with increasing age. Visible by the mid-forties, there is thereafter an increasing tendency toward self-reflection and introspection--an increasing interiority of the personality. Thus with age there occurs a shift which involves a decreasing concern with external environmental constraints and an increasing focus on internal interests and inner dynamics. Concomitant with the middle-age shift is a shift in time perspective, from time lived to time left to live.

Lowenthal, Thunher, Chiriboga and Associates. In a first phase report of an ongoing longitudinal, cross-sectional study of four life phases--high school seniors, newly-weds, middle-aged parents, and pre-retirement adults--interview data have been analyzed by these researchers in an attempt to identify commonalities in personal characteristics and to investigate the significance of these characteristics with respect to individual adaptation across the life span. Toward this end, Lowenthal

and her associates (1975) developed a typology to reflect the structural dimensions of four life styles: complex (many roles, varied pattern of activities), simplistic (few roles, limited range of activities), diffuse (few roles, varied activity pattern), and focussed (wide role scope, narrow range of activity). Although these patterns were found to be distributed across the study groups, the sex distribution pattern was interesting. For newly wed men and women (mean age 25 and 23 respectively) the complex type was modal; for middle-aged men (mean age 52) the focussed style was most prominent whereas for middle-aged women (mean age 48) the simplistic style was modal but not markedly so. For preretirement men (mean age 61) the focused style was still somewhat modal; for preretirement women (mean age 58) the focused style was slightly modal with the simplistic and diffuse styles close behind. Also noted was half of the middle-aged and older group of men expressed a need to maintain a strict schedule which suggests, according to the researchers, that a certain degree of rigidity may be associated with a focussed style. With respect to interpersonal accommodation (submissive-assertive stances), males were found to be less accommodative than females; females being at their peak in accommodation during the young adult years. On measures of self-actualization, the young adults evinced more openness, curiosity, willingness and courage to experiment and change. The psychically complex (those high in resources and deficits) were termed "buoyant and expansive"--they engaged in a broader range of activities, had more complex goals, perceived as significant more events in their lives, experienced more important events, and perceived more stress in their lives than did the psychically simple who displayed constriction in many areas, experienced few significant events, and perceived few turning points in their lives. Future orientation and goal complexity tended to be low for the psychically simple.

Levinson. The lives of 40 males, ranging in age from 35 to 45 at study commencement, were probed by Levinson and his research team (Levinson, 1978). From the data they were able to identify 'eras', with accompanying growth periods, in the life of the adult male (see Figure 2). Such periods were identified on the basis of the developmental tasks that had to be performed at that particular time in life.

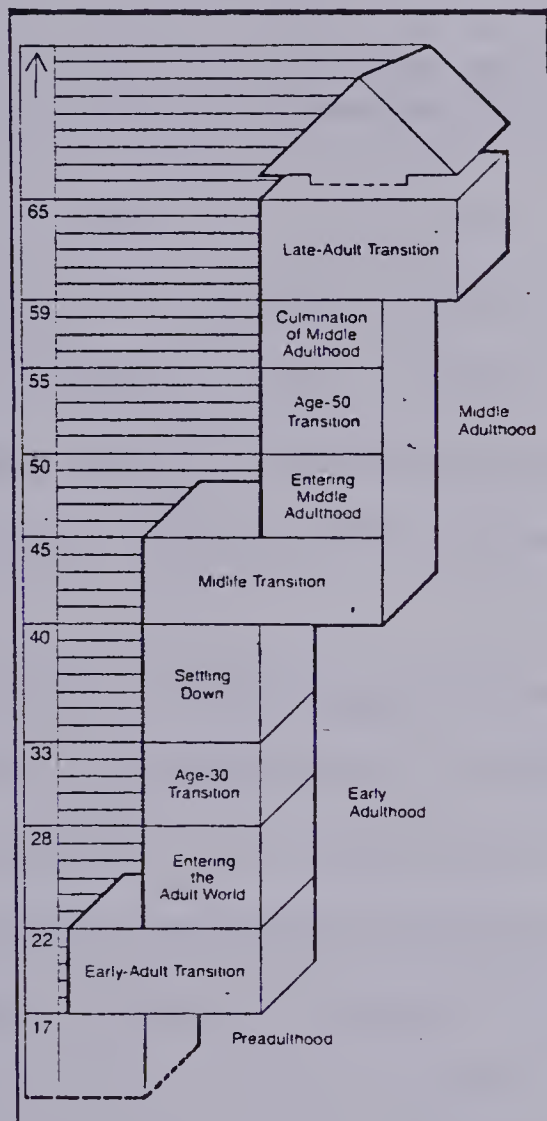


Figure 2. Levinson's eras of adult male development. (Levinson, 1969, p. 41.)

The periods encompassed by the years from approximately 17 through 33 were subsumed under the label 'novice' phase and are considered by Levinson to be most important in the course of adult life. Among the many developmental tasks common to this period, Levinson identified four as most important. The first task--and a core element in development--is that of

forming a Dream and giving it a place in the life structure. The Dream, says Levinson, "in its primordial form is a vague sense of self-in-the adult world. It has the quality of a vision, an imagined possibility that generates excitement and vitality" (1978, p. 21). At the start of the phase the Dream is "poorly articulated and only tenuously connected to reality". Of its importance, Levinson (1978) states:

A young man's growth depends a good deal on whether his early life structure is consonant with, and infused by, the Dream--or is opposed to it. If the Dream remains unconnected to his life, it may simply die, and with it will die his sense of aliveness and purpose. (p. 22)

The second important task is that of forming a mentor relationship. The function of the mentor is to support and facilitate the realization of the Dream and to be a transitional figure--"one who fosters the young man's development from child-in-relation-to-parental-adults to adult-in-peer-relation-with-other-adults". The mentorship may vary in duration from 2 to 10 years.

The third task, that of transforming occupational interests into occupation, is a complex socio-psychological process which sometimes extends beyond the novice period. The fourth crucial task is that of forming a love relationship, including marriage and family.

Following the 'Age-30 Transition' there is a move toward new choices or there may occur a rededication to past choices. It is during the 'Settling Down' period (roughly age 33 to 40) that "a man works to fulfill his Dream, pursue his ambitions, and become the hero in the scenario of his youth". He then enters the 'Midlife Transition' (roughly age 40 to 45) when there occurs a reappraisal of his life--he questions every aspect and must face up to the revelations. It is a time of crises, according to Levinson. But it is also a time when a man experiences an urge to be creative, "to create products that have value for himself and others, to join in enter-

prises that advance human welfare, to contribute more fully to coming generations".

Gould and Sheehy. While Levinson's study was concerned with males only, Gould (1975), and in collaboration with Sheehy (1974), included women in their studies. Although Gould worked independently of Levinson there is a marked similarity in the periods each identified. In brief, according to Gould and Sheehy (1974), adult development proceeds in the manner of the following sequence, given a two year variable on each side of the age marker.

Age 16-22: Pulling up roots.

Age 22-29: Provisional adulthood--doing what one should to become adult and competent. (The task is often to create a balance between the impulse to build a strong life structure and a strong commitment and the urge to explore and experiment.)

Age 29-32: Age 30 transition--Question: What am I doing and why?

Age 32-39: Rooting--the time to widen horizons and stabilize; the focus is upon external goals.

Age 39-43: Mid-life transition--one becomes cognizant of the gap between one's dreams and their fulfillment.

Age 43-50: Restabilization and flowering--'human' experiences are highly valued.

Although individuals will vary in their timing of transitions, all will follow the same sequence. There is some suggestion (Sheehy, 1976) that females engage in the 'survey of life' stage earlier than do men--about age 35 as compared with age 40 for men.

Vaillant. The Grant study which followed a group of the 'best' Harvard men through their college days of the 1940's through their fifties for the purpose of studying their adaptation to life, found general affirmation of the Eriksonian life stages (Vaillant, 1977). To the period of the achieve-

ment of intimacy--which was deemed of great importance to subsequent growth--was added a second substage, 'career consolidation'. Vaillant states:

From ages 25 to 35, they tended to work hard, consolidate their careers, and devote themselves to the nuclear family. Poor at self-reflection, they were not unlike their grammar school children; they were good at tasks, careful to follow the rules, anxious for promotion, and willing to accept all aspects of the system. (1977, p. 38)

Like Levinson, Vaillant notes that across this period an important inner process occurs --that of the "acquisition, assimilation, and final casting aside of nonparental role models or mentors", a process which becomes complete at about age 40. At 40 (plus or minus a decade) there occurs a reassessment and reordering of the truth as the individual becomes an explorer of the world within. Although it is a time of pain, the individual is now more able to acknowledge his own pain, he is less inhibited and now has a need to be of service to others. This process Vaillant refers to as a 'ripening' of personality.

By age 50 many of the men had assumed some level of leadership position and their careers had broadened. As noted by Vaillant:

Instead of becoming more specialized and acquiring progressively more competence . . . they assumed tasks that they had not been trained for. Being truly responsible for others is no job for a specialist. (1977, p. 107)

Some fifty year olds were still wrestling with career consolidation. Those who had advanced were those who enjoyed the best marriages and who had cultivated rich friendships. Perhaps, suggests Vaillant, it is the more complex brain of the middle-aged adult (a product of continued myelinization) together with his increased experience that permit the emergence of more mature response patterns at this stage of life.

The aforementioned theories evince reflections of the seminal theorists and bear many resemblances to each other. Each includes a provisional stage

of adulthood--a novice phase--when an initial commitment is made to occupation, marriage, and family. Levinson, Gould, and Sheehy note an interim point where these initial commitments are examined and at times a subsequent redirection occurs. There follows then a 'settling down' phase where there occurs a purposeful striving for visible competence. Vaillant subsumes these phases under his early adulthood conformist stage. Levinson stresses the importance of the Dream which is reminiscent of Buhler's goal setting. The mentor aspect seems well established as a key aspect of the young adult period.

The mid-life transition at about 40 years of age is a common aspect of these theories. Characteristic of this point in life is an evaluation of one's aspirations and accomplishments and a shift to a more reflective, broader, more humanistic mode of thinking. Concomitantly there may be a rededication of life's purpose in line with these newly emerging needs. Not all adults reach this level, many are still struggling with problems of previous periods.

The role of crises in transitions is an integral part of these theories.

The relation of the growth enhancement and self-actualization needs to adult stages seems to have not yet been clearly conceptualized. Kuhlen (mentioned in this paper in connection with Buhler) feels that growth needs dominate the first half of life and there appears to be some support for this in Lowenthal's report that her young adult group rated higher on self-actualization measures than did the older subjects. Vaillant, however, would seem to suggest that real creativity and self-actualization is a manifestation of the mature fifties. (The dynamics of such needs over the life cycle appear to be intriguing and merit further study.) If there is validity to both of these positions then it is reasonable to suggest that there might be two peak periods of competence in a person's occupational

life: a narrow, specialized competence in the late twenties and thirties which seems motivated, in part, by egocentric concerns; and (for some) a more embracing, mature competence in the post forties which is motivated perhaps by more humanistic concerns (in the manner of Maslow's self-actualizers).

Clearly central to these formulations is the role of work in adult life-stage development.

Attention will now be addressed to a discussion of structural developmental theories encompassing the adult years.

Structural Theory: Some Precursor Models

The basic tenants of structuralism were formulated by psychologists who, in the main, did not differentiate the sphere of personality and cognition for the purposes of studying development. This section of the review will selectively focus only upon those theories which bear directly to ensuing theories of interest to the study at hand.

Werner. It was Werner's basic assumption that "psychological phenomena such as emotions, sensations, perceptions, and thought are all bound together in mental life" (Rappoport, 1972, p. 100).

Werner delineated several principles of development that have been highly influential in subsequent formulations. The most basic principle, his orthogenetic law (Werner, 1972, p. 47), states that development "proceeds from a state of relative globality and lack of differentiation to a state of increasing differentiation, articulation, and hierarchic integration". The most differentiated, specialized, and internally integrated systems functionally subordinate and regulate lesser developed systems. Concrete (context-bound) conceptualization is genetically prior to abstract (context-free) conceptualization; lack of differentiation between subject and object precedes the state of polarity of subject and object. Later

states of development are characterized by greater organismic flexibility and freedom. Developmentally earlier modes of responding are continually present and may appear as supportive modes as when a person approaches a new problem through a developmental sequence of actions, or as a substitute for the more advanced modes (Langer, 1969, p. 93).

Werner posits the coexistence of 'fixity' (an intrinsic trend toward an end state of maximum stability) and 'mobility' (becoming) of levels of operations as polar principles of development. Once a certain stable level of integration is reached, the possibility of further development depends on "whether or not the behavioral patterns have become so automatized that they cannot take part in reorganization" (Werner, 1972, p. 53). In order for further development to take place, regression--"increasing dedifferentiation and disintegration of the higher organization of action systems"--must first occur (Langer, 1969, p. 92), or, as stated by Werner (1972, p. 52): "One has to regress in order to progress".

Piaget. The work of Piaget has proven to be most influential in subsequent cognitive developmental formulations.* Although he postulates no further stage beyond formal operations he has recently expressed interest in the "intellectual evolution from adolescence to adulthood".

According to Piaget, the inherent tendencies of the organism to organize and adapt result in a number of psychological structures which assume different forms or vary in a fairly regular sequence through development. The emergence of these differential psychological structures serves as the basis of Piaget's stage schematization. Equilibration, the theoretical complement of Werner's orthogenetic principle (Langer, 1969), is the tendency to balance the psychological structures and the requirements of the

*The reader's conversance with Piagetian theory is assumed since it is beyond the practical limits of this paper to present such an explication.

external world. When such a balance is attained, the structures are sufficiently developed and little exertion is needed to either accommodate or assimilate events. The time encompassing this dynamic balance is designated as a stage. The dialect of progressive differentiation and integration operates both between and within stages and increasing abstractness characterizes development.

According to Piagetian theory, stages have the following definitional features (Kohlberg, 1969, 1975):

1. There are qualitative differences in modes of thinking or of solving the same problem at different ages.
2. These different modes of thought form an invariant sequence in individual development.
3. Each of these different and sequential modes of thought forms a 'structured whole'.
4. Cognitive stages are hierarchical integrations (higher stages reintegrate and displace the structural characteristics of lower stages).

Lower structures, Piaget notes, do not disappear; they may continue to be used in appropriate contexts or when efforts at problem solving with higher structures fail. But there exists a hierarchical preference or disposition to prefer problem solution at the highest level available to the individual.

In reference to the problem of determining whether a structural change has occurred, Piaget suggests that the newly acquired behavior should be lasting, transferable, and fundamentally different from pre-existing behavior (Hunt, 1971a, p. 236). Kohnstamm (cited in Hunt, 1971a) adds that the new behavior should have been acquired with some difficulty and that it should prove resistant to extinction.

In Piaget's hierarchy, the final stage--formal operations--is normally attained, according to Piaget, between the individual's eleventh to

fifteenth year of life. Piaget understands the structural properties of formal operations to be based upon "a higher-order integration of logical groupings" (Rappoport, 1972). Thought at this level is flexible and multidirectional and tends toward involvement in abstract and theoretical concerns; hypothetico-deductive reasoning is available and the individual can now operate on operations (Ginsburg & Oppen, 1969).

The transition to formal operations is not clearly explicated in Piaget's writings. He invokes the concept of equilibration and suggests a possible role of neurological development, but he sees the role of the environment as of most importance, in particular, education (Inhelder & Piaget, 1958). Although Piaget hints about the role of match of schemata with environment in promoting development, he does not address himself to an explication of the principle (Hunt, 1971a).

That all adults do not attain formal operational thinking, as determined by Piagetian tests, is attested to by recent empirical studies addressed to ascertaining the status of the structural abilities across the life span. Elkind (1962) found only 58 per cent of a college sample conserved volume, males being superior. Papalia and Del Vento Bielby (1974) found volume conservation to be at its highest level during middle age with 75 per cent of the subjects passing the task as compared with 50 percent of college-aged students. Tomlinson-Keasey (1972) found that attainment of formal operations by females (aged 11 to 54 years) was rare and seemed to be dependent on "available structures, experiences, and possibly even preference". Kohlberg and Gilligan (1971) in a study of 265 persons (aged 10 to 50 years) performing on the pendulum task suggest that there seems to be no further development of formal operations, as determined by this criterion, after age thirty. They state: "Fifty percent of American adults never reach adolescence in the cognitive sense" (p. 1065).

Piaget's response to such findings is encapsulated in his statement:

All normal subjects attain the stage of formal operations or structuring if not between 11-12 to 14-15 years, in any case between 15 and 20 years. However, they reach this stage in different areas according to their aptitudes and their professional specializations (advanced studies or different types of apprenticeship for the various trades); the way in which these formal structures are used is not necessarily the same in all cases (1972, pp. 9-10).

Thus, formal operations are only free from concrete thought if "the situations involve equal aptitudes or comparable vital interests".

Kelly. Though lacking a developmental aspect, the personal construct theory of Kelly (1955) would seem to contribute toward a theory of personality change in adults.

In Kelly's personological view of "man the scientist", intellectual processes are of central significance in man's overall behavior; man is continuously, actively trying to make sense of his world of experiences. He creates "transparent patterns or templets" (personal constructs) and "attempts to fit these over the realities of which the world is composed". Kelly's construct, according to Hjelle and Ziegler (1976. p. 217), is "a category of thought by which an individual construes or interprets" his personal experience. Through the temporal process of experiencing, interpreting, and structuring--i.e. construing--experiences are generalized in an orderly and meaningful manner. Thus, Kelly's fundamental postulate: "A person's processes are psychologically channelized by the ways in which he anticipates events" (1955, p. 46).

Constructs, according to Kelly, are validated in terms of their predictive efficiency; they are subject to elaboration in the direction of either definition or extension; and they become organized into a personal hierarchical system in terms of subordinate and superordinate constructs.

Kelly identifies different types of constructs. 'Preemptive' constructs

--with frozen, exclusive membership--and 'constellatory'--with frozen realm membership enable stereotyped, unchanging thinking whereas 'propositional' constructs are open to alternatives. All three types are considered necessary to construe events. Additionally, constructs can be 'comprehensive'--subsume a wide spectrum of events--or 'incidental'--subsume a small range of events. There are 'core' constructs which govern a person's basic functioning and 'peripheral' constructs which can be altered without effecting the core structure. Some constructs are 'tight' and lead to unvarying prediction; others are 'loose' and lead to different predictions under similar conditions.

One important formal property of constructs is their degree of 'permeability-impermeability'. A permeable construct "admits to its range of convenience new elements not yet construed within its boundaries"; an impermeable construct, "while embracing events that make up its original formulation, remains closed to the interpretation of new experiences" (Hjelle & Ziegler, 1976, p. 55).

Persons thus differ, according to Kelly, with respect to their construction of events and the way in which their constructs are organized. Only by knowing the person's mode of organizing constructs can one make meaningful statements about his behavior.

Effective interpersonal interaction, according to this theory, requires that one be able to put himself into the shoes of another person in order to understand and predict the other's behavior.

As noted by Hjelle and Ziegler (1976), according to Kelly's conceptualization, if one could change one's constructs, one could change one's life. Kelly postulated that a construct system change occurs most often when the individual is exposed to novel or unfamiliar events which do not

conform to his existing system of constructs. Experiential feedback leads to a modification of constructs which in turn are used as new hypotheses to progressively change the system. The degree of construct permeability will be a modulating factor in change; the more permeable the superordinate constructs, the greater the amount of variation or systematic change within the substructures. If the person has no superordinate constructs for construing change, then change cannot occur within his system and he remains psychologically rigid.

In passing, one notes that Kelly's 'man the scientist' model appears to be somewhat of a cognitive analogue to White's model of competence motivation.

Having thus discussed some of the basic tenants of structural developmental theory, attention in this review will now be directed to successor models, commencing with ego and interpersonal formulations.

Interpersonal and Ego Structural Developmental Models

Sullivan, Grant, and Grant. Based upon the assumption that individual differences in character are largely differences in relative maturity, Sullivan, Grant, and Grant (1957) developed a characterology of levels of interpersonal integration (see Table 1).

The core structure of personality, which serves an organizing function, is comprised of "experience, needs, expectations, and perceptions", all in some more or less integrated cognitive scheme (Loevinger, 1977). With development the individual not only becomes more differentiated but also, and because of the tendency to try to assimilate new stimuli in such a way as to minimize cognitive reorganization, he becomes more simplified and integrated. The consistency and stability of the core personality is evinced when under conditions of stress, superficial need demands disappear

Table 1

Sullivan, Grant, and Grant's Levels of
Interpersonal Maturity and Adult Functioning

Level	Characteristic Adult Functioning
1. Integration of Separateness: discrimination of difference between self and nonself	Unidimensional thinking; generalized anxiety; difficulty in coping, postponing, establishing authority, distinguishing real-unreal, and in dependency relations; passive
2. Integration of Nonself Differences: environment differentiated into persons and objects; minimal appreciation of others	Perceives people as (a) aides or barriers to own satisfactions, and (b) differing only slightly from objects; manipulates; may be overtly aggressive or may conceal resentment through withdrawal or compliance; feels greatly misunderstood
3. Integration of Rules: perceives rules and formulae governing relationships between people and objects; senses potential for complex manipulation	Views world as a series of rigidly organized, rule-bound relationships; concerned with control and may respond by constantly testing or conforming; threatened by perceptions of adequate others
4. Individuation of Response*	Characterizes self as different from the norm and from specific people
5. Integration of Continuity: perceives stable action patterns in self and others	Relates to others empathically, enjoys others; anxious under conditions of role ambiguity
6. Integration of Self-Consistency: perceives differences between self and one's social role	Defines roles in terms of relationships and interactions with others; self is perceived as distinct from any specific relationship with others and as an enduring stable organism
7. Integration of Relativity, Movement, and Change: perceives integrating processes in self and others	Conceives of a variety of ways of perceiving and integrating; empathizes with less mature modes of others

* Based upon a revised characterization of this level as reported in Loevinger (1976).

and core personality need demands emerge. For example, under personal stress altruistic behaviors may be replaced by egocentric, self-protective activity.

Development is described in terms of seven stages, each of which, like Erikson's, is defined in terms of a problem, in this case an interpersonal problem which must be solved before development can continue. Solution at each level involves a cognitive restructuring of experience and expectancy and results in the evolution of a new reference scheme and a new level of integration. The characteristics of the prevailing organization at each level influence the potential for change and the direction, intensity, and character of reorganization at the succeeding level. With advancement, the person becomes better able to view himself and the world more accurately and functions more effectively.

As in the Eriksonian conception, all persons do not reach maturity as defined by the model but may become fixed at a particular integration level. Intensive and chronic threat or stress leads to the adoption of a variety of defenses to maintain the status quo and, over time, a characteristic pattern or 'style of life' is established. Characteristic adult functioning at each level of integration is briefly described in Table 1.

On the basis of the model, Grant, Warren, and Turner (1963) have elaborated and tested with adjudicated delinquents a differential treatment model which matches level of interpersonal maturity with characteristics of the treatment worker. Low maturity subjects are matched with tolerant, supportive, protective workers; medium level subjects with firm, conwise, willing-to-punish workers; and high level subjects with wise, understanding, and warm workers.

Loevinger. A composite of many predominant views, the structural stage model of Loevinger conceptualizes the sequence of ego development in

terms of coping with increasingly deeper problems at each stage. The stages are marked by milestones which are defined as "observable behaviors that tend to rise and fall in prominence as one ascends the scale of ego maturity" (Loevinger, 1966, p. 202). Each stage "builds on, incorporates, and transmutes" the previous stage.

Although the model, detailed in Table 2, is free of age-specific contingencies, this discussion will commence with the second stage, the Self-Protective. An adult who remains at this stage may, according to Loevinger (1976), be "opportunistic, deceptive, and preoccupied with control and advantage". The extremely externally-oriented person of the Conformist stage obeys rules because they are group accepted and out of a desire to avoid disapproval. For him, there is security in belonging. He is particularly prone to stereotyped conceptions of roles and is much concerned with externals. The Conscientious-Conformist, which Loevinger prefers to label a transition level (rather than stage), is marked by increased self-awareness and the perception of exceptions and alternatives. The person evinces a number of pseudotraits (midway between group stereotypes and appreciation of individual differences). Loevinger feels that this level is modal for adults in present society.

At the Conscientious stage the internalization of rules is completed and the person evaluates and chooses rules for himself; he shows responsibility for others; he sees himself as the "origin of his own destiny"; he aspires to achievement (as measured by his standards); his inner life is richer and more differentiated; and his thought categories are more differentiated. A second transitional level, the Individualistic, is marked by "a heightened sense of individuality and a concern for emotional dependence". People relations are seen as partly antagonistic to the

Table 2

Loevinger's Milestones of Ego Development

Stage	Impulse Control, Character Development	Interpersonal Style	Conscious Preoccupations	Cognitive Style
Presocial Symbiotic Impulsive	Impulsive, fear of retaliation	Autistic Symbiotic Receiving, dependent, exploitative	Self vs. non-self Bodily feelings, especially sexual and aggressive	Stereotyping, conceptual confusion
Self-Protective	Fear of being caught, externalizing blame, opportunistic	Wary, manipulative, exploitative	Self-protection, troubles, wishes, things, advantage, control	
Conformist	Conformity to external rules, shame, guilt for breaking rules	Belonging, superficial niceness	Appearance, social acceptability, banal feelings, behavior	Conceptual simplicity, stereotypes, cliches
Conscientious-Conformist	Differentiation of norms, goals	Aware of self in relation to group, helping	Adjustment, problems, reasons, opportunities (vague)	Multiplicity
Conscientious	Self-evaluated standards, self-criticism, guilt for consequences, long-term goals and ideals	Intensive, responsible, mutual, concern for communication	Differentiated feelings, motives for behavior, self-respect, achievements, traits, expression	Conceptual complexity, idea of patterning
Individualistic	Add: Respect for individuality	Add: Dependence as an emotional problem	Add: Development, social problems, differentiation of inner life from outer	Add: Distinction of process and outcome
Autonomous	Add: Coping with conflicting inner needs, toleration	Add: Respect for autonomy, interdependence	Vividly conveyed feelings, integration of physiological and psychological, psychological causation of behavior, role conception, self-fulfillment, self in social context	Increased conceptual complexity, complex patterns, toleration for ambiguity, broad scope, objectivity
Integrated	Add: Reconciling inner conflicts, renunciation of unattainable	Add: Cherishing of individuality	Add: Identity	

NOTE: "Add" means in addition to the description applying to the previous level.

Source: Adapted from Loevinger (1976), pp. 24-25.

striving for achievement. Greater conceptual complexity along with notions of psychological causality and psychological development characterize modes of thinking. The Autonomous stage is marked by the capacity to "acknowledge and to cope with inner conflict". There is a high toleration for ambiguity; increased conceptual complexity; cognizance of others' need for autonomy; and the embracing of "broad, abstract social ideals".

The highest stage, the Integrated, is marked by a consolidation of the sense of identity. This stage, according to Loevinger and Wessler (1970), is comparable to the heights of Maslow's self-actualizers and is realized by few--about one percent of the population.

A measurement scale has been devised by Loevinger and Wessler (1970) for the purposes of indexing ego development.

There appears to be a basic compatability emerging between characterizations of maturity as espoused by fulfillment theorists, the course of adult development as detailed from a psychosocial perspective, and the formulations of the structuralists thus far discussed. Such theories are of considerable value in the attempt to define (describe) adult psychological maturity and toward an understanding of adult behavior. What is absent from these models is a theory of change, a model for the inducement of further development in prematurely arrested adults. It is in the area of cognitive structural developmental theory that advances have been made in this respect and it is to a consideration of these theories that attention will now be addressed.

Cognitive Structural Developmental Models

Kohlberg. Stimulated by Piaget's genotypic approach to cognitive development and in particular his work on moral development (Piaget, 1932), Kohlberg (1958) elaborated a classical structural theory of the develop-

ment of moral maturity. Stages were delineated on the basis of an analysis of the underlying processes and structural organization of responses to moral dilemmas. Kohlbergian stages, like those of Piaget, are regarded as being qualitatively distinct, forming 'structured wholes', being of invariant sequence, and being hierarchically integrated. The core of each stage is a conception of justice which serves to organize patterns of role-taking in situations of moral conflict. It is the development of this core which gives rise to stage development as detailed in Table 3.

According to Kohlberg, advanced logical reasoning is a necessary but not a sufficient condition for advanced moral judgment since most people measure higher on logical stage (Piagetian) than on moral stage. Tomlinson and Keasey (1972) found a strong relationship between formal operations and moral development.

With respect to stage transition, Kohlberg, like Piaget, places central emphasis upon 'logico mathematical' experience--"a person's active interaction with his environment, in which he or she applies and checks the use of his various schemes of action and representation" (Tomlinson, 1974)--and the equilibration process.

Kohlberg and Kramer (1969) originally held that stage 5 principled thought was an adolescent accomplishment with the crystallization of stage 6 thinking taking place in the early twenties. Any subsequent development was considered to be a matter of dropping childish modes and thus increasing the consistency of responses rather than the formation of new or higher modes of thought. However, faced with difficulties in explaining findings where individuals who had displayed principled thinking in high school (as measured by the Moral Judgment Scale) seemingly retrogressed to a "skeptical egocentric relativism" in early college

years and then later returned to principled thinking, led Kohlberg to a reconsideration of the concept of regression.

Adopting the conception of Turiel (1969) that "the apparent regression involved in stage development is a disequilibrium of transition very different than the disorganization or dedifferentiation involved in regression", Kohlberg (1973) decided that his college retrogressors should have been labeled stage $4\frac{1}{2}$, a transitional stage to principled

Table 3

DEFINITION OF MORAL STAGES

I. PRECONVENTIONAL LEVEL	
At this level, the child is responsive to cultural rules and labels of good and bad, right and wrong, but interprets these labels either in terms of the physical or the hedonistic consequences of action (punishment, reward, exchange of favors) or in terms of the physical power of those who enunciate the rules and labels. The level is divided into the following two stages:	for the first time. One earns approval by being "nice."
STAGE 1: The punishment and obedience orientation. The physical consequences of action determine its goodness or badness regardless of the human meaning or value of these consequences. Avoidance of punishment and unquestioning deference to power are valued in their own right, not in terms of respect for an underlying moral order supported by punishment and authority (the latter being Stage 4).	STAGE 4: The "law and order" orientation. There is an orientation toward authority, fixed rules, and the maintenance of the social order. Right behavior consists of doing one's duty, showing respect for authority, and maintaining the given social order for its own sake.
II. CONVENTIONAL LEVEL	
At this level, maintaining the expectations of the individual's family, group, or nation is perceived as valuable in its own right, regardless of immediate and obvious consequences. The attitude is not only one of conformity to personal expectations and social order, but of loyalty to it, of actively <i>maintaining</i> , supporting, and justifying the order, and of identifying with the persons or group involved in it. There are the following two stages:	III. POSTCONVENTIONAL, AUTONOMOUS, OR PRINCIPLED LEVEL
STAGE 2: The instrumental relativist orientation. Right action consists of that which instrumentally satisfies one's own needs and occasionally the needs of others. Human relations are viewed in terms like those of the market place. Elements of fairness, of reciprocity, and of equal sharing are present, but they are always interpreted in a physical, pragmatic way. Reciprocity is a matter of "you scratch my back and I'll scratch yours," not of loyalty, gratitude, or justice.	At this level, there is a clear effort to define moral values and principles that have validity and application apart from the authority of the groups or persons holding these principles and apart from the individual's own identification with these groups. This level again has two stages:
STAGE 3: The interpersonal concordance or "good boy—nice girl" orientation. Good behavior is that which pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or "natural" behavior. Behavior is frequently judged by intention—"he means well" becomes important	STAGE 5: The social-contract legalistic orientation, generally with utilitarian overtones. Right action tends to be defined in terms of general individual rights and standards which have been critically examined and agreed upon by the whole society. There is a clear awareness of the relativism of personal values and opinions and a corresponding emphasis upon procedural rules for reaching consensus. Aside from what is constitutionally and democratically agreed upon, the right is a matter of personal "values" and "opinion." The result is an emphasis upon the "legal point of view," but with an emphasis upon the possibility of changing law in terms of rational considerations of social utility (rather than freezing it in terms of Stage 4 "law and order"). Outside the legal realm, free agreement and contract are the binding elements of obligation. This is the "official" morality of the American government and Constitution.
	STAGE 6: The universal ethical principle orientation. Right is defined by the decision of conscience in accord with self-chosen ethical principles appealing to logical comprehensiveness, universality, and consistency. These principles are abstract and ethical (the Golden Rule, the categorical imperative); they are not concrete moral rules like the Ten Commandments. These are universal principles of <i>justice</i> , of the <i>reciprocity</i> and <i>equality</i> of human <i>rights</i> , and of respect for the dignity of human beings as <i>individual persons</i> .

Source: Kohlberg and Elfenbein, 1975, p. 620.

reasoning. The relabelling was accomplished by revising the scoring system of the Moral Judgment Scale to reflect more directly the structure rather than the content of moral thought. A reanalysis revealed that none of the subjects of his current longitudinal study under 23 years of age displayed true stage 5 thinking and, as yet, none of the subjects as of age 30 had attained predominantly stage 6 thinking. Kohlberg (1973) now holds that fully-principled thinking is an adult development typically not reached until the late twenties or later.

Such reconsiderations led to a reconsideration of the context of change to principled thinking. The context believed conducive to earlier stage changes involves an exposure to reasoning one stage higher than the subject's current level within the context of situations posing problems and contradictions to the resident structure. In an atmosphere of open interchange and dialogue, the situation generates self-dissatisfaction with the current level and leads to the adoption of the more advanced level. Whereas these earlier stages represent increasingly more adequate perception of the social system, principled thinking, says Kohlberg, is a "postulation of principles to which society and the self ought to be committed" (1973, p. 194). Thus, a different kind of experience seems required for progression to this level.

Noting research by Blatt who by using the 'optimal mismatch' technique (described above) failed to move high school stage 4's to stage 5 and by comparing this with research by Boyd who was successful in moving 40 per-cent of first and second year college stage 4's to stage 5, Kohlberg conjectures that important for transition to principled thought are "personal experiences of choice involving questioning and commitment, in some sort of integration with stimulation to cognitive-moral reflection" (1973, p. 196). Thus, according to Kohlberg, social maturity in terms of independence and

self-accountability plus the stimulation to reflect would seem to constitute necessary preconditions for transition to principled thinking.

Potential for change seems rather uncharted by Kohlberg. Turiel (1969), who has addressed this question, suggests that a high degree of stage mixture is an index of change potential, a low degree of mixture (i.e. consistency) would indicate a low potential for developmental change.

Empirical work using Kohlberg's instrumentation to index level of moral development finds few persons at the more mature stages; stage 4 appears to be the modal population level.

Both Loevinger (1976) and Kohlberg (1973) have indicated possible stage correspondences between their two models. Chickering (1976) suggests the following associations (see Table 4):

Table 4
Phases of Ego Development
Associated With Moral Development

Ego Development Stages					
Presocial Symbiotic	Impulse- ridden, fearful	Self-protective	Conformist	Conscientious	Autonomous Integrated
Moral Development					
Egocentric	Obedience- punishment oriented	Instrumental egoism and exchange	Good-boy, approval oriented	Authority, rule, and social order oriented	Social contracts, legalistic oriented Moral principle orientation

Source: Adapted from Chickering (1976), p. 72.

Lambert (1972) found that individuals who scored high on Loevinger's ego development measure also scored high on Kohlberg's instrument.

Although Kohlberg's model is amenable to empirical study through the use of the Moral Judgment Scale, his explication of change inducement in adult subjects at this point lacks the necessary adequacy required for

guiding attempts at adult development. It is, however, a pregnant source of suggestion relevant to adult development.

Conceptual Systems Theory. A synthesis of the cognitive and the affective constituents of personality is found in the eclectic approach of Harvey, Hunt, and Schroder (1961) to personality development and organization. Focusing upon concepts as links or intervening media, conceptual systems theory emphasizes the structural components, the networks or groups of concepts, which underlie evaluation and response to stimuli and the adaptive function which these serve the individual. Structure and function are assumed to be interdependent. The most important structural characteristic is the degree of concreteness or abstractness, a point reminiscent of Werner and Piaget. The self, in this formulation, is defined as "the intertwined totality of one's concepts" (1961, p. 6).

Classified as an interactional theory, and clearly rooted in the seminal conceptions of Kelly and Piaget, the formulation assumes that concepts develop out of experience with the environment--this experience being partly determined by the nature of the environment and partly by the internal state of the person.

Development represents progression along a continuum toward greater abstractness. Increasing abstractness "assumes an increased availability of alternative concepts for coping with the same stimuli"; causality becomes less attributed to external forces and more attributable to one's own transactions with the environment. More abstract thought as opposed to concrete functioning is characterized by:

Differentiation between the outer and inner worlds in the ego and experience Assumption of a mental set wilfully and consciously Accounting for one's acts to oneself or to others and verbalizing the act Ability to shift reflectively from one aspect of the situation to another The simultaneous holding in mind of various aspects Grasping the essentials of a

given whole, breaking it up into parts, isolating and synthesizing them Reflective abstraction of common properties and the formation of hierarchic concepts Planning ahead ideationally and the assumption of the attitude of 'the mere possible'. (Harvey, et al., pp. 28-34).

Development of conceptual systems is viewed in terms of four hierarchically ordered stages of fixed order, regardless of age (Harvey et al., 1961, pp. 94-100).

Stage 1: Unilateral dependence. Concepts are undifferentiated and functioning is sensitive to external control; thinking is very concrete and behavior is geared to reality.

Stage 2: Negative independence. Concepts are not highly articulated; efforts are directed towards self-assertion and definition of self by establishing the borderline between the self's authority and that of others and through questioning of external control and avoidance of dependence.

Stage 3: Conditional dependence and mutuality. Self becomes separate from the outside world; conceptual systems are open to new data; empathic behavior or mutuality increases; locus of causality shifts to one's own behavior.

Stage 4: Interdependence. External and internal standards are integrated in a union of positive interdependence; functioning is characterized by abstractness; a bank of concepts become available; mutuality and autonomy are now integrated.

Progress from one stage to the next is contingent upon the process of differentiation and integration. As described by Rappoport (1972):

The individual at a given stage of conceptual development will, under normal conditions, recognize the limits of that stage because of contradictions or inconsistencies in his conceptual system. This forces him to differentiate elements in the system, to examine them more carefully in an effort to resolve the difficulty. And such differentiation eventually leads to a new integration--a rearrangement of elements in the system such that the former confusions are corrected. (p. 106)

Movement along the concrete-abstract continuum proceeds if the environmental conditions "facilitate openness to the discrepant

conceptual orderings or differentiations required for progression" but if "environmental pressures are out of synchrony with the conceptual structures required for the emergence of a more abstract synthesis, fixation or arrestation of development occurs" (Harvey et al., 1961, pp. 87-91).

Since the 1961 joint publication, each contributor (along with his colleagues) has emphasized and further elaborated distinctly specific dimensions of the original theory. Harvey (1966, 1967) has concentrated on the motivational (system-specific content) and environmental characteristics (training agents) whereas Schroder (1971; Schroder, Driver, & Streufert, 1967) and Hunt (1966, 1971b) have emphasized information processing and integrative complexity. Hunt (1971) has concentrated as well upon the development of a matching model for the purpose of optimizing the development of integrative complexity.

Harvey. The position of Harvey has evolved little from the original statement. Holding with a posited relationship between an individual's level of abstractness (structural variation) and the content of his more central concepts, Harvey (1966, 1967) has formulated four self-systems which, with the exception of having incorporated an etiology of child-rearing, closely resemble the parent model of Harvey, Hunt and Schroder.

Based on data from a series of studies, Harvey concludes that the following are characteristic of concrete system functioning (the reverse of each would characterize greater abstractness): simple, relatively undifferentiated and incompletely integrated cognitive structures; categorical thinking; high dependency upon external cues and authority as guides to action; an intolerance of ambiguity; a great need for cognitive consistency and reduction of cognitive dissonance; inability to change set, stereotypic solution of complex problems; has available a paucity of

problem solutions; insensitive to "subtle and minimal cues" and highly susceptible to false, obtrusive cues; limited capacity to "act as if" or assume the role of the other; is opinionated; scores high on dicatatorialness and manifests the relevant behavioral characteristics; scores low on task orientation; and forms generalized impressions of others from incomplete information (1967, pp. 206-207). Concrete systems, according to Harvey (1966), have a low threshold for warding off or excluding incompatible information and thus are relatively closed whereas more abstract systems, having a higher threshold for such information, are open systems.

Schroder. Emphasizing the information processing aspect of conceptual systems, Schroder has focussed upon 'integrative complexity'--"the number and connectedness of conceptual or 'integrating' rules used for organizing information in thinking, judging, valuing" (Schroder, 1971, p. 240). The information processing model consists of two interdependent components: dimensions, "which classify the content of thought and the kinds of discriminations possible by the person", and integrating rules, "which determine how information will be processed, received, stored, and acted upon" (Levy, 1970, p. 285). Basic to the elaboration of integrative complexity is the person's ability to differentiate (locate stimuli along dimensions) and to integrate (to utilize complex rules, or programs, to combine these dimensions (Goldstein & Blackman, 1978). Although the number of dimensions is not necessarily related to the integrative complexity of the individual, the probability of more complex combinatorial rules increases with a greater number of available dimensions, the relationship being curvilinear (Schroder, 1971).

Combinatorial power, expressed as an integration index, increases with progression along the concrete-abstract continuum and organizational development proceeds through universal stages "from categorical single

dimensional valuing and thinking through multidimensional single rule structure, multidimensional multirule (unconnected) structure, to multidimensional multiconnected combinatory rule structure" (Schroder, 1971, p. 263), as shown in Figure 3.

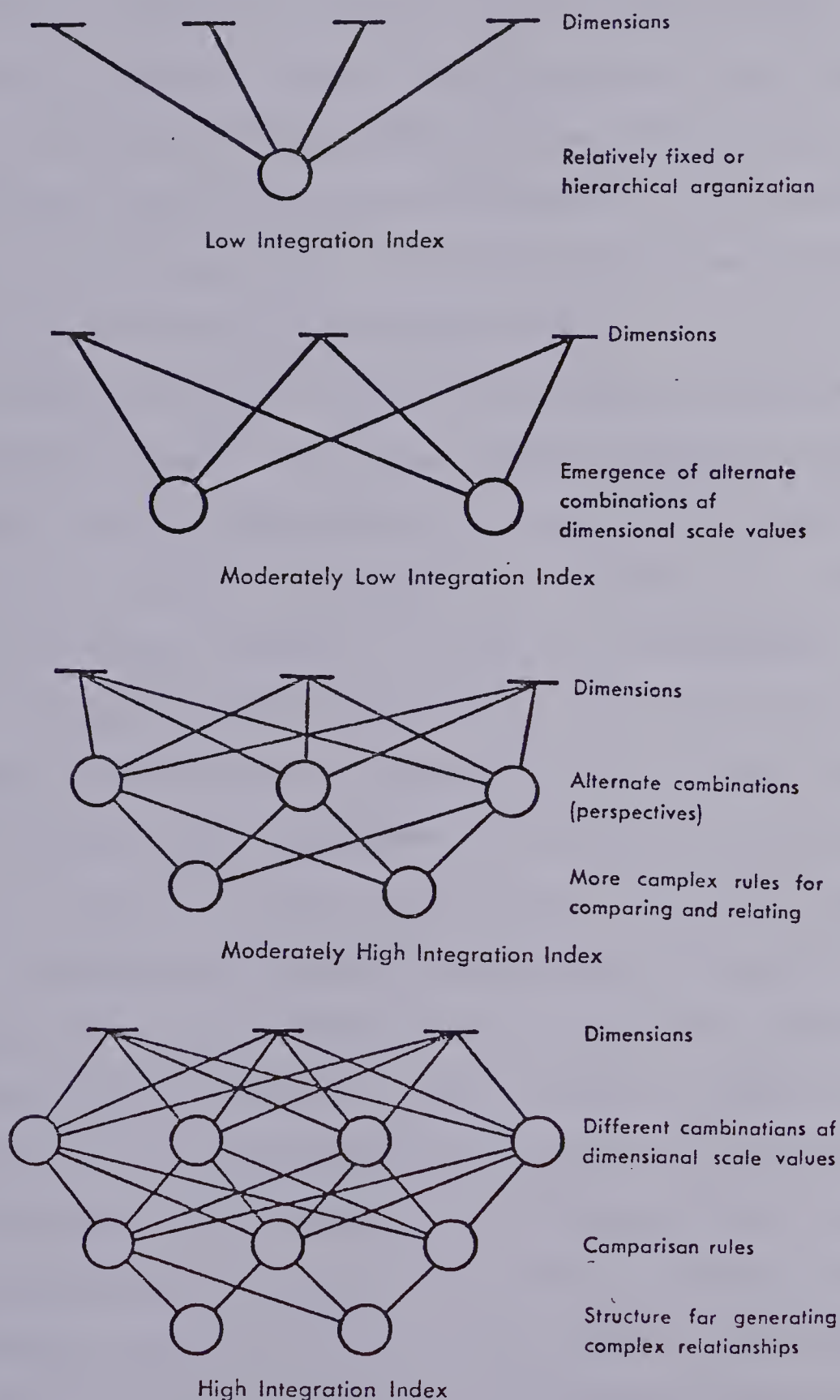


Figure 3. Diagrams of levels of integrative development.
(Schroder, Driver, & Streufert, 1967)

Whereas a low integrative index is associated with bifurcated thinking, externality, absolutistic standards, lack of conflict, inability to "act as if", and general rigidity; a high integrative index is associated with more degrees of freedom in the integrative process, less certainty, the ability to apply laws in organizing large bodies of information, a theoretical outlook, ability to deal with diversity, greater discrimination and potential for the generation of new schemata in the absence of new external input. Such descriptions seem in accord with the parent model and with Harvey's current work.

According to Schroder (1971), the learning of categories or dimensions is explicable in terms of classical learning principles but how the individual organizes scale values of information is a product of the type of environment provided for organizational learning. He characterizes such environments as ranging on a continuum from unilateral, agent determination of combinatorial rule and agent control of behavior, to interdependent, self-generation of combinatory rules and goals with distinctive feedback provided and encouragement to use the same information in different ways. Whereas unilateral, overpowering, or stressful environments lead to arrestation of conceptual organization at lower levels, interdependent, inductive environments promote development through the stages. Long term training effects in a domain are seen to result in the development of relatively stable dispositional information processing structures.

With respect to the possibility of inducing further development in arrested individuals, results are cited from two studies--Lee and Carrington (Schroder, Karlins, & Phares, 1973)--in which training directed toward increasing the number of dimensions and training directed toward increasing the number of different concepts used both resulted in score increments

on the Paragraph Completion Test (Schroder's measure of integrative complexity). Schroder optimistically states:

It is our contention that despite certain genetic limits, this ability (information-processing ability) is modifiable and can be developed--even in adults--given appropriate environments. (1973, p. 43)

Contemporaneous functioning is dependent upon the interaction of dispositional and situational factors; the posited relation between the two as shown in Figure 4.

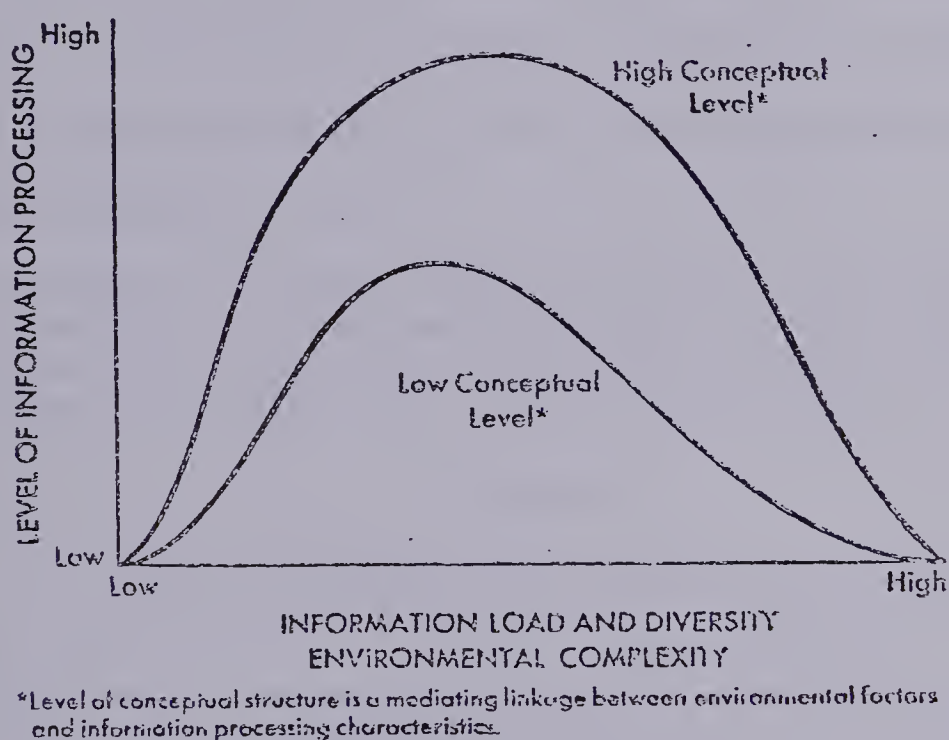


Figure 4. Conceptual level expressed as an interaction between dispositional and situational factors. (Schroder, 1971, p. 264.)

Hunt. Conceptual level (CL) is used by Hunt (1975a, 1977) as an index of cognitive complexity (discrimination, differentiation, and integration--as in Schroder's model) and interpersonal maturity (self-definition and self-other relations--as reminiscent of Sullivan, Grant & Grant).

Subsequent to the 1961 joint publication, studies undertaken by Hunt (1966) and his colleagues led to a slight revision of the parent model. He found it necessary to add a very low stage, termed Sub-1. Further, he became convinced that the motivational orientation of the original stage 3

did not constitute a stage. Hunt's published model (1971b, 1975b) elaborates three stages of development; his manual for Assessing Conceptual Level by the Paragraph Completion Method (Hunt, Butler, Noy, & Rosser, 1977) includes a transitional level between the second and third stages (see Table 5). CL development is viewed as continuous under ideal conditions; stage designations function only as "anchor points" to facilitate understanding of the process (Hunt & Sullivan, 1974). Developmentally, Hunt (1975a) conceives CL in terms of "increasing conceptual complexity, increasing interpersonal maturity, and increasing understanding of oneself and others (p. 222). Higher level functioning is considered desirable in that:

A person at a higher Conceptual Level is more structurally complex, more capable of responsible actions, and, most important, more capable of adapting to a changing environment than a person at a lower Conceptual Level. (Hunt, 1975b, p. 187)

Table 5

Hunt's Conceptual Level Developmental Model

Stage	Characteristics
A (Sub I)	Impulsive, relatively unsocialized, self-centred, inattentive, defensive
B	Compliant, dependent on authority; concerned with rules; thinking is polarized, dichotomous
Transitional	Entertains ideas of others and considers alternatives but does not integrate these in the problem solution or decision; concerned with his inner thoughts and feelings; strives for independence
C	Ponders alternatives before finalizing decisions; shows sensitivity to others by seeking compromise but not at the expense of his own values, principles, or beliefs; accepts responsibility for the consequences of his decisions

The work of Schroder (as reviewed previously) seems to lend validity to the above interpretation. Additionally, Suedfeld (1964) has demonstrated that high CL persons are more capable of resisting indoctrination

(or more stress tolerant) than low CL persons. Wolfe (1963) found that high CL persons were better able to look at a problem from a variety of viewpoints.

There is some evidence for a stage-age relation in that in the population of 12 to 18 year olds studied by Hunt, the proportion of Stage A decreased and the proportion of Stage C persons increased with age.

Sullivan, McCullough and Stager (1970) found a significant relation between CL and moral judgment scores and also between CL scores and Loevinger's ego levels in a teenage population.

Hunt adopted and elaborated the B-P-E (Behavior-Person-Environment) paradigm of Lewin (1935) to serve as the model for his interactive view and as the basis of his matching model. The basic dimension of environmental variation in this model is the degree of structure, or the degree of organization provided by the environment. His definition of the degree of structure is as follows:

In high structure, the environment is largely determined by the training agent . . . while the person himself . . . has little responsibility for what happens in that environment. In low structure, by contrast, the person experiencing the environment is at least as important in determining the environment as is the training agent. (Hunt & Sullivan, 1974, pp. 213-214)

Hunt posits the person-environment match in the following manner:

Given the characteristics of low CL persons (dependent on external standards and incapable of generating their own concepts), they should profit more from a highly structured approach. Given the characteristics of high CL persons (capable of generating new concepts and holding internal standards), they should either profit more from low structure, or be unaffected by variations in structure. (Hunt, 1975b, p. 187)

In terms of educational practice, or current learning, Hunt uses the term 'learning style' to describe the student's CL and defines it in terms of how much structure a student needs in order to learn best. Figure 5 is a summary of this conception.

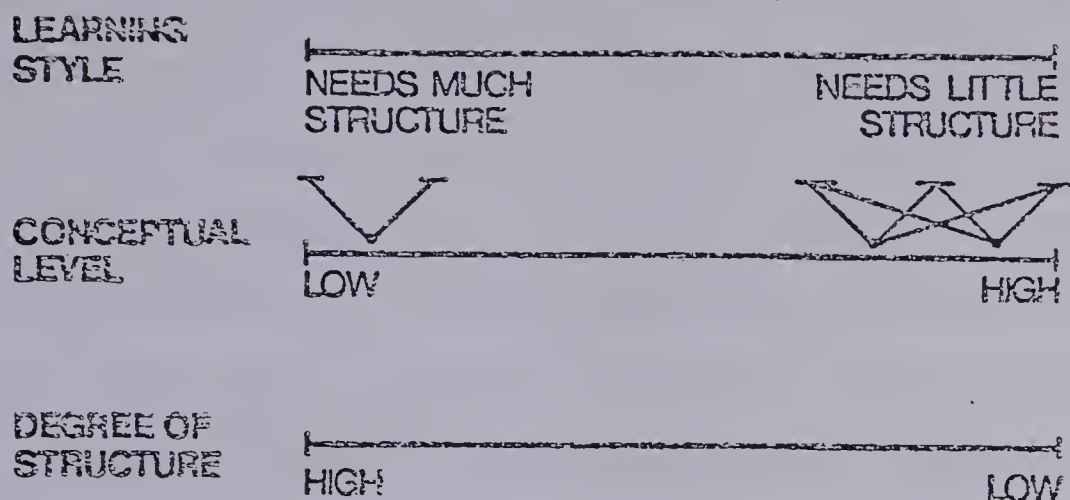


Figure 5. Contemporaneous matching model. (Hunt, 1975a)

Experimental support for this conception has been found by Hunt and his colleagues with school students. An early study reported by Hunt (1971b) showed that when ninth grade students were grouped homogeneously by CL, high CL students profited more from independent study; lower CL from a more structured presentation. Results from a national evaluation of Project Upward Bound showed student improvement following the differential matching model (Hunt, 1971b). Tomlinson and Hunt (1971b) found that low CL students learned better when a 'rule-example' order (high structure) was followed, whereas high CL students performed fairly well under all conditions (including 'example-rule' and 'example-delayed rule') although their performance was lowest under high structure. McLachlan and Hunt (1973) found that low CL grade eleven students were able to subjectively integrate significantly better under high structure (lecture) than under low structure (discovery) while high CL students performed well under both conditions.

Related evidence from other studies may also be cited. For example, Tuckman and his associates (Tuckman, 1968; Tuckman & Orefice, 1973) found that high CL students preferred non-directive teachers. Tuckman and Orefice (1973) also note that the type or cognitive level of the task

interacts with the conceptual orientation of the learner and results in differential outcomes (a position originally posited by Siegel and Siegel, 1965). In this respect, Noy and Hunt (1970) found high CL students to be superior on the cognitive levels of recall, comprehension, and synthesis regardless of whether the instructional approach was student or system directed. Hunt, Joyce, Greenwood, Noy, Reid, and Weil (1974) found that all groups--high to low CL--of junior high school students were able to learn independently through an inductive teaching approach. It was noted that the low CL group proceeded in a more step by step manner and that the higher CL groups indicated a more favorable attitude toward the approach.

Just as behavior is an interactive function of the person and the environment, as exemplified in the above model, so developmental change (change in the person) is an interactive function of the person's stage of development and the environment he experiences, says Hunt (1975a). Person characteristics, then, will also index variations in developmental change.

A person and his environment are developmentally matched, according to Hunt and Sullivan (1974), "if the combination produces progression" and they are mismatched "if the combination results in arrestation or no progression". Developmentally matched environments were derived by Hunt in accord with the following logic:

For the Stage A person to progress to Stage B, he must understand and incorporate the cultural rules. Since rules are learned best when they are clearly defined, the matched environment to foster development to Stage B is a clear, consistent, highly structured one. Following similar logic, the matched environment for progression from Stage B to Stage C is moderately structured with encouragement for self-expression and autonomy. (Hunt, 1975b, p. 189)

And "Stage C persons are assumed to benefit from environments that are highly autonomous" (Hunt & Sullivan, 1974, p. 210).

Figure 6 is a summary of the differential developmental model.

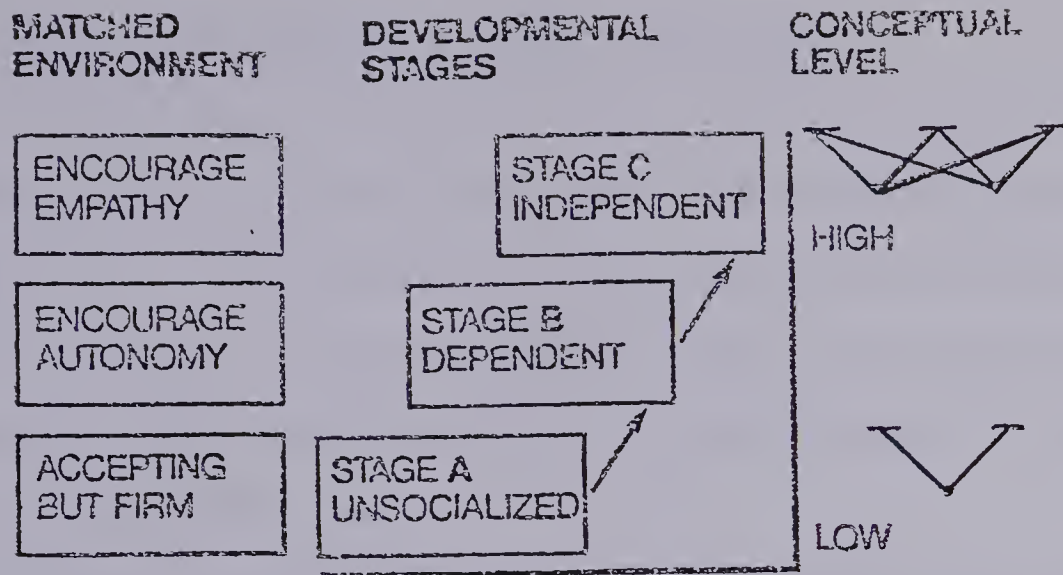


Figure 6. Developmental matching model. (Hunt, 1975a)

As noted by Hunt, evidence in support of an interactive developmental model is difficult to gather. However, Cross (1973), in a study of junior high school boys (of similar age and IQ), found that parents of Stage C boys were significantly more interdependent (the Schroderian term) and less structured in their relationships with their sons than were parents of Stage B boys.

Like Schroder, Hunt uses the Paragraph Completion method but with his own structural scoring system to index CL.

The contemporaneous view of CL as "an accessibility characteristic related to environmental degree of structure" and the developmental view of CL as "a succession of stages related to long-term goals for developmental progression" (Hunt & Sullivan, 1974) together with the accompanying matching models and instrumentation suggest a suitable and seemingly adequate model for the planning and examination of the effects of a given experience upon functioning and development. Although relatively little work has been done with adult subjects involved in occupations, the model should be applicable unless one anticipates a high residual conceptual level to characterize the target population.

Summary of Personality Maturity and Adult Development

The foregoing review served toward the end of (a) defining personality maturity in adult subjects from both a psychological perspective and a psycho-social perspective; and (b) investigating the dynamics of continuing development in adulthood as they pertain to the facilitation of such movement and to the inducement of further development in prematurely arrested individuals.

As discussed by personologists and ego psychologists, the mature personality is characterized by: an openness to experience; flexibility of functioning; a self-actualizing, self-fulfilling bent; a capacity for involvement and enriched living; an independent, self-confident, autonomous, yet responsible orientation; veridical perception; sensitivity, empathy, and interpersonal effectiveness; and allocentrism, purpose, and commitment. Many of these same characteristics were recognized by Heath (1965) in a study of mature personality functioning.

Cognitive-structural psychologists characterize the mature personality in terms of abstractness of thought; differentiated, articulated, and integrated thinking; the multidimensionality and complexity of the thought structures; and the use of logical and principled thinking. The behavioral manifestations are quite consonant with the functional characteristics as described above.

Reflection upon the developmental stages as postulated by the structuralists (cognitive, ego and interpersonal) and upon the stages of psycho-social development as delineated by the life structure theorists would seem to suggest a possible relationship. It would seem that there would be a developmentally advantageous match between persons at Loevinger's Conformist and Conscientious stages and/or Hunt's dependent B (and transitionals) and sequential passage through the novice period-the

twenties, the age thirty transition, and the 'settling down' period. People at Loevinger's Self-Protective stage, Kohlberg's Instrumental-Relativistic stage, and Hunt's low Conceptual Level would be expected to experience much difficulty in completing the developmental tasks of the early adult stage and thus would probably stagnate at this level of structural and functional development. It would seem that only those who attain the higher levels of Loevinger's Autonomous and Integrated stages and Hunt's higher Conceptual Levels would experience the mature, productive, rewarding life styles of the post forties. The others, it would seem, would remain at the general conforming level of development, a less-than-fulfilled stage. Such an interpretation seems consistent with the views of Erikson and Sullivan, Grant, and Grant.

There seems to be a consensus of opinion that under ideal facilitatory conditions, there is a realization of the natural predisposition of the organism to proceed toward maturity. Under less than ideal conditions or aversive conditions, development ceases, becomes arrested; there may be functional regression and development may stabilize at a less-than-mature level. It appears that potentiality for functional change and change in life style is characteristic of the stage of maturity whereas functional stability characterizes less-than-mature personalities. The degree of stability, perhaps as represented in stage mixture, may be an important factor in attempts to induce change and further development.

Empirical data suggest that few persons in the present social milieu maximize their potential for development. There does appear to be some optimism with respect to the possibilities of furthering development in adulthood--such optimism being kindled, in the main, by the more recent serious consideration of interactional theory. That experience is a key factor related to change in adults (as contrasted with the maturational

theme of earlier development) seems generally agreed upon but experience potency, according to many psychologists, is related to the individual's present level of structural development. Given the significance of experience, as subsumed by the environment, then the most theoretically adequate and relevant theory to guide action at the present time would seem to be Hunt's interactive matching model. The close relationship between this model and the work of Schroder would seem to lend some credibility to such a decision. (Further, as will be discussed later in this review, Hunt has elaborated the model to encompass the socialization of teachers.)

It must be remembered that the relationships noted between and among models remain open to empirical verification at the adult level.

The importance of occupation and occupational socialization was alluded to by the fulfillment theorists and constituted an integral part of the life structure formulations. Attention will now be directed toward an examination of this area in relation to development.

Personality and Occupation

Work as a central part of adult life and development was clearly articulated by the life structure theorists. Similarly, Erikson saw work as playing a role in the resolution of the identity crisis and as one of the avenues for the resolution of the generativity crisis. The view of the self-oriented theorists is summarized by Lugo and Hershey (1974) thus:

The job is an important source of one's identity. It provides an important source of self-esteem and is a major aspect of one's self-concept during the adult years. (p. 527)

Kimmel (1974) concurs that the job is a salient aspect of a person's identity "ranking in importance along with his name, sex, and citizenship".

The centrality of work is articulated by many social psychologists as well. According to Henry (1975), work is the third major socializing

force in life. Stoll (1974) notes that for men, and increasingly so for women, a work attachment seems basic to developing a meaningful conception of life. Argyris (Ullrich, 1972) speaks of the generalization effects of apathy toward work into nonwork aspects of one's life--the product of which is a generally apathetic individual.

Most people, state Warr and Wall (1975), would continue to work even if it were not financially necessary. Why? Frequently referred to in the literature on this subject is man's need for an optimal level of stimulation, as posited by Berlyne (1960); man's need to achieve, as posited by McClelland (1961); as well as White's need for competence and Maslow's conceptions of needs and self-actualization, as discussed earlier in this report. In this respect Maslow is quoted as having said "I think I am most happy and most myself, and most being as if that's what I were meant to be when I am involved in my work" (Warr & Wall, 1975, p. 10). Argyris (1957) feels that one of the reasons for the general absence of self-actualization in our society stems from our present work environments, from the lack of opportunity to satisfy the higher-order needs.

Argyris' Worker Maturity Model

On the basis of his observations of workers, Argyris, a long-time student of organizational behavior and interpersonal relationships, posited an immaturity-maturity continuum with the following polar characteristics: passive vs active; dependence vs independence; behaves in few ways vs capable of behaving in many ways; erratic shallow interests vs deeper and stronger interests; short time perspective vs long time perspective (past and future); subordinate position vs equal or superordinate position; lack of awareness of self vs awareness and control over self (Hersey & Blanchard, 1972, p. 51).

Models of Developmental Needs in Relation to Work Environments

Herzberg's Two-Factor Theory. Stimulated by an interest in psychological growth on the job, Herzberg (1966), on the bases of extensive interviews, concluded that the needs of workers fall into two categories which are essentially independent of each other and affect behavior in different ways (see Table 6). When people are dissatisfied with their jobs their concern is with the environment in which they work--atmosphere, culture, and climate--whereas when they feel good about their jobs this has to do with the job itself. The former, Herzberg called 'hygiene' factors--they produce no growth in output capacity--and the latter were termed 'motivating' factors--they develop the kind of job satisfaction that tends to increase performance.

Table 6

Factors in Motivation-Hygiene Theory

Hygiene Factors	Motivating Factors
Environment	The Job Itself
Policies and administration	Achievement
Supervision	Recognition for accomplishment
Working conditions	Challenging work
Interpersonal relationships	Increased responsibility
Money, status, security	Growth and development

Source: Owens and Steinhoff, 1976, p. 123.

Hall's 'Career Success Cycle'. Incorporating both the individual and conditions of the working environment, Hall's 'Career Success Cycle' is based upon three assumptions: (1) people seek rewards and positive reinforcement from their work, (2) work behavior which is rewarded will tend to be repeated, and (3) whenever possible people attempt to increase their sense of self-esteem and avoid lowering the same (Hall & Morgan, 1977, p. 205). One way of enhancing self-esteem, reason Hall and Morgan, is

through the development of competence. Thus, a cyclical "success breeds success" model was generated, as shown in Figure 7.

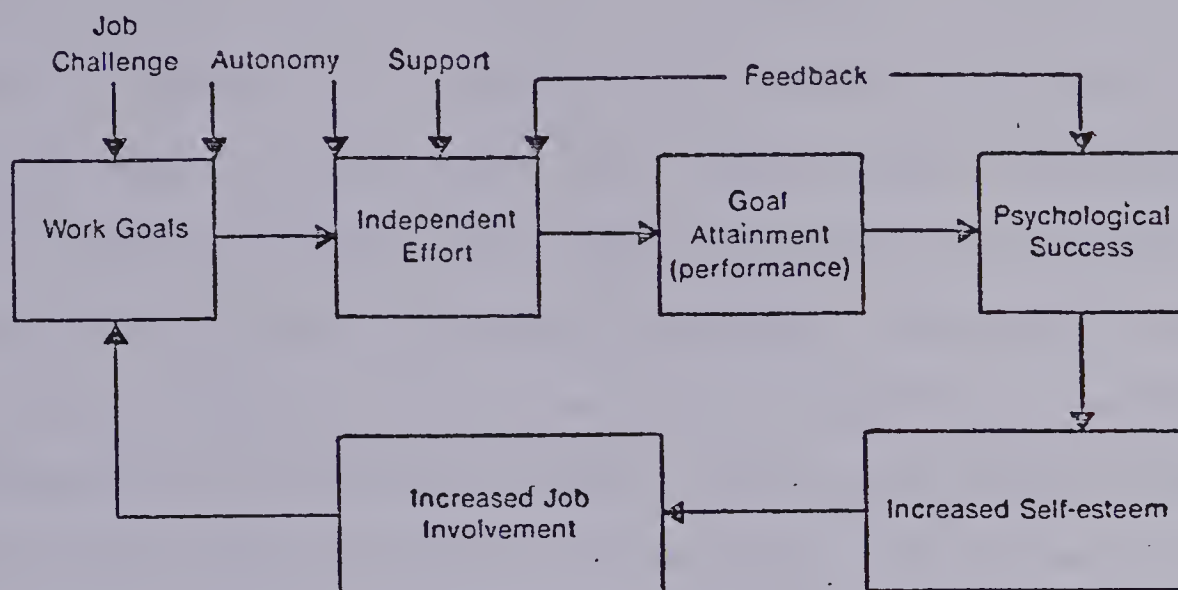


Figure 7. Hall's Career Success Cycle. (Hall & Morgan, 1977, p. 206)

With respect to working conditions, Hall and Morgan state:

A challenging job makes it possible for the person to set difficult work goals. Autonomy on the job enables the person to determine his or her own means of attaining work goals. Support, help, and coaching from the boss and peers can be helpful in solving problems and maintaining work motivation. Feedback--information about how close the person is to attaining his or her work goals--is important in two ways. First, it helps the person direct his or her effort more effectively to improve performance. Second, it helps the person evaluate or confirm the level of performance that has been achieved. (1977, p. 206)

Thus, a certain optimal level of support, feedback, and autonomy in the organizational climate is required for the cycle to be operative. From their studies and those of others, Hall and Morgan conclude that "when people are deprived of opportunities for psychological success in an organization over many years, they may lose much of their desire to utilize conditions for psychological success when challenging work is finally made available" (1977, p. 207).

Homan's theory of group pressures. The positive benefits of peer support were noted by Hall and Morgan--an observation that is reminiscent of the positive driving force of group pressures noted in the classic

Hawthorne studies (Hersey & Blanchard, 1972)--but according to Homans (1950), group influence can be detrimental to development.

Homans reasons that in order for an organization to survive, certain activities, interaction, and sentiments are required of its members. Interaction leads to sentiments and, in a cyclical spiralling process, increased interaction leads to more positive sentiments and the more positive sentiments lead to increased interaction. Thus there is a tendency for group members to become more alike in behavior and feelings and group expectations or norms are developed about how one "ought" to behave. Deviations from these norms incur group sanctions. The influence that group pressures can have in achieving uniformity is well documented by the classical Asch experiments (Cartwright & Lippitt, 1971).

McGregor's Theory X-Theory Y. Since the classic Hawthorne studies of the 1930's, a few theorists have been interested in looking at motivating environments. One of the better known theories is McGregor's (1960) Theory X-Theory Y. As described by Landry and Trumbo (1976)

Theory X and Theory Y . . . each embody a set of beliefs about human nature. Theory X assumes that all people are lazy, irresponsible, avoid challenge, etc., while Theory Y assumes that all people are industrious, responsible, seek challenge, etc. Organizations could be described on the basis of these two sets of assumptions. (p. 399)

According to McGregor, organizational practices for adherents of the traditional Theory X are characterized by structure, control, and close supervision of personnel. Adherents of Theory Y practices expose their employees to less external control, allowing them to assume progressively more self-control.

Argyris and Shon's Model I-Model II. Like McGregor, Argyris and Shon (1974) have articulated two models of professional practice (see Table 7). Model I, they state, is characteristic of many of our social institutions including the family and school. Compliance and identification are learned

Table 7
Argyris and Schon's Models of Professional Practice

<i>Governing variables</i>	<i>Action strategies</i>	<i>Consequences for the behavioral world</i>	<i>Consequences for learning</i>	<i>Effectiveness</i>
MODEL ONE				
1. Define goals and try to achieve them	1. <i>Design and manage the environment</i> unilaterally (be persuasive, appeal to larger goals)	1. Actor seen as defensive, inconsistent, incongruent, competitive, controlling, fearful of being vulnerable, manipulative, withholding of feelings, overly concerned about self and others or underconcerned about others	1. Self-sealing	Decreased effectiveness
2. Maximize winning and minimize losing	2. <i>Own and control the task</i> (claim ownership of the task, be guardian of definition and execution of task)	2. Defensive interpersonal and group relationship (dependence upon actor, little additivity, little helping others)	2. Single-loop learning	
3. Minimize generating or expressing negative feelings	3. <i>Unilaterally protect yourself</i> (speak with inferred categories accompanied by little or no directly observable behavior, be blind to impact on others and to the incongruity between rhetoric and behavior, reduce incongruity by defensive actions such as blaming, stereotyping, suppressing feelings, intellectualizing)	3. Defensive norms (mistrust, lack of risk-taking conformity, external commitment, emphasis on diplomacy, power-centered competition, and rivalry)	3. Little testing of theories publicly. Much testing of theories privately	
4. Be rational	4. <i>Unilaterally protect others from being hurt</i> (withhold information, create rules to censor information and behavior, hold private meetings)	4. Low freedom of choice, internal commitment, and risk-taking		

Table 7 (Continued)

Governing variables	Action strategies	Consequences for the behavioral world	Consequences for learning	Consequences for quality of life	Effectiveness
MODEL II					
1. Valid information.	1. Design situations or environments where participants can be origins and can experience high personal causation (psychological success, confirmation, essentiality).	1. Actor experienced as minimally defensive (facilitator, collaborator, choice creator).	1. Disconfirmable processes.	1. Quality of life will be more positive than negative (high authenticity and high freedom of choice).	Increased long-run effectiveness.
2. Free and informed choice.	2. Tasks is controlled jointly.	2. Minimally defensive interpersonal relations and group dynamics.	2. Double-loop learning.		
3. Internal commitment to the choice and constant monitoring of its implementation.	3. Protection of self is a joint enterprise and oriented toward growth (speak in directly observable categories, seek to reduce blindness about own inconsistency and incongruity).	3. Learning-oriented norms (trust, individuality, open confrontation on difficult issues).	3. Public testing of theories.	2. Effectiveness of problem solving and decision making will be great, especially for difficult problems.	
	4. Bilateral protection of others.				

through a Model I process. Chickering (1976) describes Model I interpersonal relationships in the following manner:

In Model One, interpersonal relationships are goal-oriented toward maximizing winning and minimizing losing, with strong emphasis on rationality and minimal open expression of negative feelings. Relationships tend to be characterized by persuasion, stereotyping, intellectualizing, suppression of feelings and information, competition, manipulation, and outward conformity with limited internal commitment. (p. 75)

The self-sealing behavior of Model I, according to Argyris and Shon, is most significant "because it prevents the improvement of congruence, consistency, and effectiveness of theories-in-use (operational theories) by preventing learning" (1974, p. 86). Thus, Model I is seen as building in immaturity with respect to Argyris' immaturity-maturity continuum.

The most significant property of Model II on the other hand "is its ability not to be self-sealing, its tendency to permit progressively more effective testing of assumptions and progressively greater learning about one's effectiveness". As described by Chickering:

In Model Two, the emphasis is on creating valid information so that internal commitment to free and informed choices can occur, and so that actions can be openly and continuously monitored. Interpersonal relationships call for initiative, collaboration, direct observations, attention to one's own biases and inconsistencies, minimal defensiveness, trust and respect for individuality, and open confrontation on difficult issues. (1976, pp. 75, 78)

Model II, according to Argyris and Shon, is conducive to cumulative personal development or progress along the immaturity-maturity continuum.

Owens and Steinhoff's Mechanistic-Organismic model. In a parallel fashion Owens and Steinhoff (1976) acknowledge the existence of two styles but designate them as 'mechanistic' and organismic' and prefer to place them on a continuum to allow for different conditions faced by organizations.

In order to assume a more adequate perspective on development and occupational context attention will now be addressed to the dimension of

time, of career passage.

Career Stage Models

Schein's career stages. Analogous to the life structure models of development is Schein's model of the structure or basic stages of a career. The model is based upon the assumption that career development is basically "a process of learning or socialization (during which organizational influence is at a maximum), followed by a process of performance (during which individual influence on the organization is at a maximum), followed by a process of either becoming obsolete or learning new skills which lead to further development" (1971, p. 310). The stages are outlined sequentially although some may occur simultaneously (see Table 8).

Although movement within an organization may occur along three dimensions--vertically (change in rank), radially (change in centrality), and circumferentially (change in function)--the dynamics of the career are in terms of a sequence of boundary passages. Schein posits three types of boundaries purported to characterize the internal structure of the organization: (a) hierarchical; (b) inclusive--"separate individuals or groups who differ in the degree of their centrality"; and (c) functional or departmental boundaries.

Following from the model, Schein (1971, pp. 314-316) has developed the following hypotheses about organizational influences on the individual (socialization) and individual influences on the organization (innovation):

Hypothesis 1. "Organizational socialization will occur primarily in connection with the passage through hierarchical and inclusion boundaries; efforts at education and training will occur primarily in connection with the passage through functional boundaries." The individual is most vulnerable to socialization pressures immediately before and after passage.

Table 8

Basic Stages, Positions, and Processes Involved in a Career

<i>Basic Stages and Transitions</i>	<i>Statuses or Positions</i>	<i>Psychological and Organizational Processes: transactions between individual and organization</i>
1. Pre-entry	Aspirant, applicant, rushee	Preparation, education, anticipatory socialization
Entry (trans.)	Entrant, Postulant, recruit	Recruitment, rushing, testing, screening, selection, acceptance ("hiring"); passage through external inclusion boundary; rites of entry; induction and orientation
2. Basic training, novitiate	Trainee, novice, pledge	Training, indoctrination, socialization, testing of the man by the organization, tentative acceptance into group
Initiation, first vows (trans.)	Initiate, graduate	Passage through first inner inclusion boundary, acceptance as member and conferring of organizational status, rite of passage and acceptance
3. First regular assignment	New member	First testing by the man of his own capacity to function; granting of real responsibility (playing for keeps); passage through functional boundary with assignment to specific job or department
<i>Sub-stages</i>		
3a. Learning the job		Indoctrination and testing of man by immediate work group leading to acceptance or rejection; if accepted further education and socialization (learning the ropes); preparation for higher status through coaching, seeking visibility, finding sponsors, etc.
3b. Maximum performance		
3c. Becoming obsolete		
3d. Learning new skills, etc.		
Promotion or leveling off (trans.)		Preparation, testing, passage through hierarchical boundary, rite of passage; may involve passage through functional boundary as well (rotation)
4. Second assignment	Legitimate member (fully accepted)	Processes under no. 3 repeat
<i>Sub-stages</i>		
5. Granting of tenure	Permanent member	Passage through another inner conclusion boundary
Termination and exit (trans.)	Old timer, senior citizen	Preparation for exit, cooling the mark out, rites of exit (testimonial dinners, etc.)
6. Post-exit	Alumnus emeritus, retired	Granting of peripheral status

Source: Schein, 1971, p. 311

Hypothesis 2. "Innovation . . . will occur in the middle of a given stage of the career, at a maximum distance from boundary passage."

Hypothesis 3. "In general, the process of socialization will be more prevalent in the early stages of a career and the process of innovation late in the career, but both processes occur at all stages".

(These patterns are shown in Figure 8.) Individual innovation will always occur to some extent but in order to lead to new ideas or processes which are functional for the organization, sub-group norms must be reasonably well integrated with organizational norms and goals.

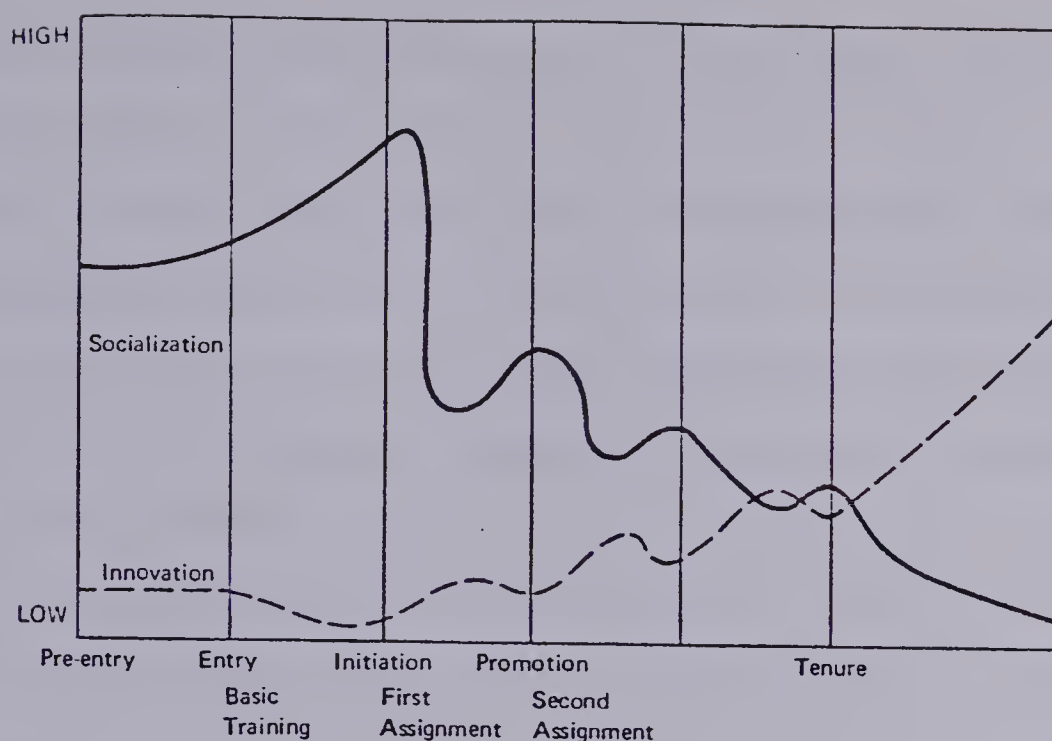


Figure 8. Socialization and innovation during the stages of the career. (Schein, 1971, p. 315)

Hypothesis 4. "Socialization or influence will involve primarily the more labile social selves of the individual, while innovation will involve primarily the more stable social selves of the individual". ('Social selves' includes beliefs and attitudes, according to Schein.)

Hypothesis 5. "A change in the more stable social selves as a result of socialization will occur only under conditions of coercive persuasion, i.e. where the individual cannot or does not psychologically feel free to leave the organization." The individual in this situation may well begin to conform to organizational norms even in terms of his more stable self and become virtually unable to innovate. This pattern is but a special instance and should not be confused "with normal processes of socialization, those involving the more labile parts of the person's self and the more pivotal role requirements or norms of the organization", cautions Schein.

Hall's integrative model of career stages. In contrast to the Schein model which tracks people's movements through the organization, Hall shows career passage in terms of changes in the person (Hall & Morgan, 1977). The model (see Figure 9) is derived from relating the career stages as defined by Super (Super, 1957; Super & Bohn, 1970) to stages of adult

development as defined by Erikson and the life structure theorists.

The Eriksonian period of 'identity' and the life structure period of 'Getting into the adult world' (G.I.A.W. in the Hall model) coincide with Super's exploration period of career development. It is during this time that self-examination, role tryouts, and occupational exploration take place. The stage terminates in a trial period where the individual tests person-occupation fit; goal conflict may be evidenced and job change may result. This observation was also made by Ullrich (1972) in a study of fit between aspired needs and capacity of the environment to provide fulfillment.

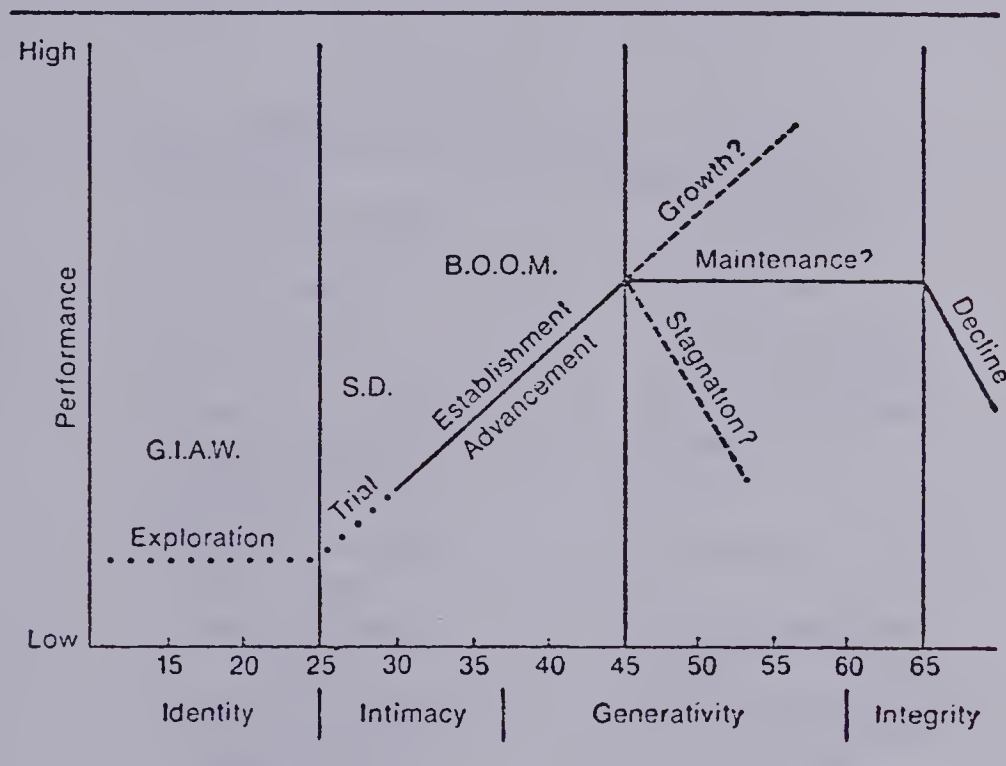


Figure 9. Hall's integrative model of career stages. (Hall & Morgan, 1977, p. 208)

The next stage (approximate age 25 to 44) is one of establishment and, according to Hall, consists of achievement, performance, and advancement. The earlier part of the period corresponds with the life structuralists' 'Settling down' (S.D.); subsequently, the severing of mentor ties results in 'Becoming one's own man' (B.O.O.M.). The period encompasses

Eriksonian 'intimacy' and overlaps with his 'generativity' phase. A mid-career plateau, the maintenance stage, follows in the forties. According to Hall's interpretation of the literature, this period may be one of moderated continuation or it may be a period of "searching, reappraisal, depression, and redirection". Depending on how successful the person is in confronting and overcoming the developmental tasks of this crisis period, there may be continuing growth or stagnation and early decline. The final stage, termed decline by Super, involves transition to retirement and corresponds with Erikson's period of 'integrity'.

Hall has posited training needs--task and personal--associated with each of the career stages. These needs are delineated in Table 9.

Table 9

Training Needs Within Career Stages

Stage	Task Needs	Emotional Needs
<i>Trial</i>	<ol style="list-style-type: none"> 1. Varied job activities 2. Self-exploration 	<ol style="list-style-type: none"> 1. Make preliminary job choices 2. Settling down
<i>Establishment/ Advancement</i>	<ol style="list-style-type: none"> 1. Job challenge 2. Develop competence in a specialty area 3. Develop creativity and innovation 4. Rotate into new area after 3-5 years 	<ol style="list-style-type: none"> 1. Deal with rivalry and competition; face failures 2. Deal with work-family conflicts 3. Support 4. Autonomy
<i>Mid-career</i>	<ol style="list-style-type: none"> 1. Technical updating 2. Develop skills in training and coaching others (younger employees) 3. Rotation into new job requiring new skills 4. Develop broader view of work and own role in organization 	<ol style="list-style-type: none"> 1. Express feelings about mid-life 2. Reorganize thinking about self in relation to work, family, community 3. Reduce self-indulgence and competitiveness
<i>Late career</i>	<ol style="list-style-type: none"> 1. Plan for retirement 2. Shift from power role to one of consultation and guidance 3. Identify and develop successors 4. Begin activities outside the organization 	<ol style="list-style-type: none"> 1. Support and counseling to see one's work as a platform for others 2. Develop sense of identity in extraorganizational activities

Source: Hall & Morgan, 1977, p. 218.

Adams' preservice professional developmental stages. Adams (1969), in a study of postgraduate students undergoing a professional socialization program in Organizational Behavior, generated a framework to describe their psychological development (passage) from being primarily self-oriented to involvement-oriented to instrumentality-oriented. Each of these levels was further elaborated to include four parallel phases: 'situation dependent' and 'reaction to situation', both considered reactive; 'coordination of self and situation' and 'integration of self in situation', both considered proactive. The transitions are shown in Figure 10.

		PHASE			
		I Situation dependent	II Reaction to situation	III Coordination of self and situation	IV Integration of self in situation
LEVEL	A Focus on self	Shock	Defensive retreat	Acknowledgement	Adaption and change
		<i>Self as a result of the situation</i>			
	B Focus on involvement	Inhibition	Action or opposition	Conceptualisation	Internalisation
		<i>Self as a part of the situation</i>			
	C Focus on instrumentality	Observation	Reflection or testing	Formulation	Implementation
		<i>Self as instrumental in the situation</i>			

Figure 10. Adams' phases of personal and professional development.
(Hopson & Adams, 1976, p. 10)

Adams observed different rates of passage and that all students did not complete the sequence. Hopson and Adams (1976) believe this model has wide applicability in understanding transitions across life.

As suggested above and in addition to major influences as already discussed, individual variations in competence and career development are evinced. It is toward Kaufman's discussion of such factors that attention will now be directed.

Person Factors in Career Development

From a review of the research on professional obsolescence, Kaufman (1974) noted three reported types of relationships between age and professional competence: (a) a competence peak early in the career (in the thirties) and a decline thereafter; (b) a peak in the post fifties; and (c) both an early and a later peak. A possible explanation for these findings, according to Kaufman, is that there are two populations--after the early peak one group becomes obsolescent and the other group remains current despite increasing age.

Intellectual and cognitive abilities seem related to professional achievement and effectiveness. Kaufman cites studies involving engineers and managers which show that the adoption of new ideas is more likely to occur among persons who are "more intelligent, have a greater ability to deal with abstractions, and possess more technical knowledge". According to Kaufman, many older professionals as a result of accumulated experience may be superior in cognitive strength as compared with younger colleagues (a point made earlier in this paper by Levinson and currently of much interest to students studying adult abilities).

A second factor related to currency is that those individuals who manifest a strong inner motivation (self-motivation) do not experience the early decline sometimes noted in the forties but rather tend to prolong their achievement over a broad span of their career.

Kaufman identifies three aspects of self-motivation which relate to individual career development. Firstly, a professional's fundamental interests, which are developed and stabilized before career entry, are related to the degree of professional currency maintained. A second factor has to do with the way needs change during career passage. Lower level security needs, according to Kaufman, are very strong at the beginning of

the career but then sharply diminish in strength within five years. But during that period the higher order growth needs (achievement, esteem, self-development) increase intensely regardless of career success. The stronger these growth needs, the weaker the predisposition to obsolesce, posits Kaufman. Individuals with high achievement needs are, says Kaufman (1974, p. 56), "more dependent on their own skills for success, are more willing to take risks, assume greater responsibility for making decisions, and tend to anticipate future exigencies by taking current action with respect to future developments." Individuals experiencing successful careers are able to satisfy their growth needs by the fifth year but for those who do not experience success the satisfaction of such needs plummets. If frustration of growth needs continues into mid-career then, according to Kaufman, these needs may be replaced by protective-security needs, a process akin to psychological regression. If the growth needs are satisfied they level off, reach a plateau, and other types of needs may emerge that will direct later career goals. Individual strivings may then be directed toward serving his profession, family, community, or the like. Kaufman also notes that goals are subject to the goal emphasis of the organization and "there is a socialization process whereby the individual's goals become more congruent with those of the organization" (1974, p. 58).

Growth needs can be satisfied by attainment of either goals that are local (unidimensional)--doing the best job--or goals that are cosmopolitan (multidimensional)--directed to the profession. (Advanced education seems to be associated with more cosmopolitan goals.) Kaufman suggests that obsolescence is more likely to occur among those who lack some degree of cosmopolitan goal orientation.

Another change that occurs during career life is in respect to the expenditure of effort: Young persons have more energy, more reason to expend energy, and do expend more energy than their older colleagues. Initiative, which relates to success and independent efforts at updating, may diminish over time but for some individuals may increase with age, says Kaufman. Rigidity shows a similar pattern: Individuals generally become more rigid with age but some of the old may be more flexible than the young.

As suggested by Kaufman, entering behavior (characteristics) may well have a predisposing effect upon subsequent career development. Super (1957) posits that both career selection and satisfaction are functions of one's total personality and life style. Rosenberg (1970) found that students who scored high on his people-oriented scale (were compliant) chose social work, medicine, teaching, and social science; those who scored high on his self-expression scales (were detached) chose architecture, journalism, and art; and those who scored high on extrinsic-reward orientation (were aggressive) chose sales, hotel management, estate agency, and finance.

A search of the literature reveals that some attention has been directed toward a deliberate coordination of worker characteristics and manager/leader styles for the purposes of maximizing worker effectiveness and facilitating the development of worker maturity. It is toward this topic that discussion will now turn.

Managerial-Worker Matching Models

Graves. It has been suggested by Graves (Loevinger, 1976) that deteriorating work standards may be the result of incongruency between the psychological level of the worker and the managerial style of the manager.

Based on the assumption that the mature adult tends to change his psychology as the conditions of his existence change, Graves has delineated seven hierarchical adult stages of worker development--"levels of human existence"--as follows (Loevinger, 1976, pp. 102-104):

- (1) Autistic behavior--responds only to giving and to care
- (2) Animistic existence--requires close supervision
- (3) "Awakening and fright"--responds to rigidly prescribed and enforced rules
- (4) Aggression and power orientation--resists fitting into a prescribed organizational design but responds well to incentives
- (5) Sociocentric orientation--after physical and material security have been ensured the worker desires a congenial, comfortable working environment and responds well to group efforts to institute labour-saving devices. (Mismatching of 5th level managers with 3rd and 4th level workers can be disastrous.)
- (6) Aggressive individualism--a responsible, creative person who insists on attaining goals in his own way (May appear threatening to 4th or 5th level managers.)
- (7) Pacifistic individualism--also resists domination, coercion, and restriction but less oppositional than 6th level; thrives on trust and respect

Hersey and Blanchard's 'Life Cycle Theory' of leadership. In a more comprehensive manner, Hersey and Blanchard (1972) have developed a leadership model based on the theory that

As the level of maturity of one's followers continues to increase, appropriate leader behavior not only requires less and less structure (task) while increasing consideration but should eventually entail decreases in socioemotional support (relationships). (1972, p. 134)

The developmental matching model, shown in Figure 11, proposes that beginning with the structured task behavior, which is appropriate for working with immature people, the leader should move, as his followers move along the immaturity-maturity continuum, through (1) high task-low relationships behavior to (2) high task-high relationships to (3) high

relationships-low task behavior to (4) low task-low relationships behavior.

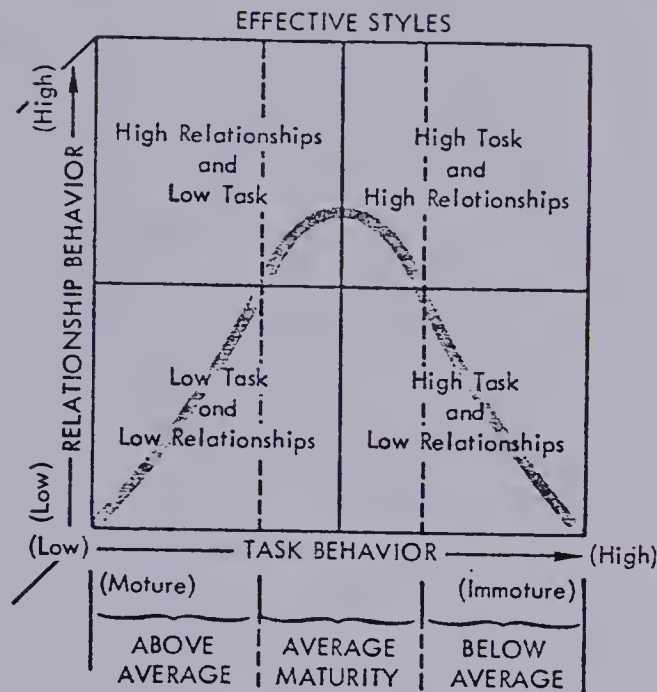


Figure 11. 'Life Cycle' leadership-follower matching model.
(Hersey & Blanchard, 1972, p. 142)

Although Hersey and Blanchard originally defined maturity as "achievement-motivation, the willingness and ability to take responsibility, and task relevant education and experience" (1972, p. 134), the model was easily extended to encompass Argyris' immaturity-maturity conception (see Figure 12). The relation of Maslow's hierarchy of needs and Herzberg's Motivation-Hygiene theory to the Life Cycle model is also indicated in Figure 12. Also, it would seem that McGregor's Theory X-Theory Y, Argyris and Shon's Model I-Model II, and Owens and Steinhoff's Mechanistic-Organismic conceptions are readily accommodated by this model.

Employing the Lewinian concept of change--unfreeze, change, refreeze, Hersey and Blanchard use the model to show the change sequence, as illustrated in Figure 13.

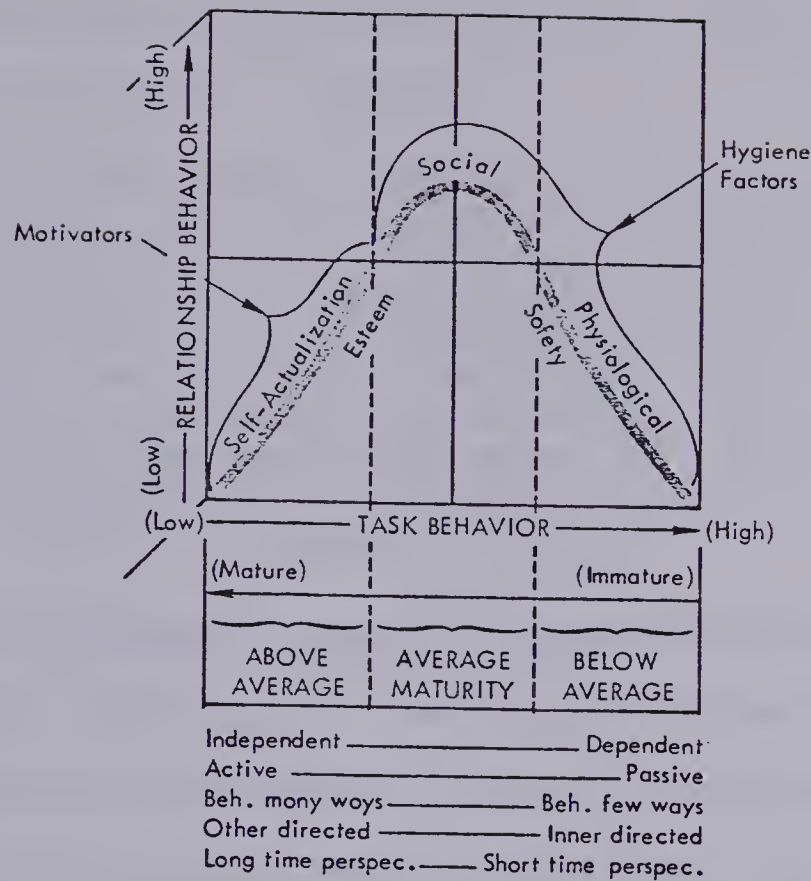


Figure 12. Relationships between Life Cycle theory of leadership and Maslow's hierarchy of needs, Herzberg's motivation-hygiene theory, and Argyris' immaturity-maturity continuum. (Hersey & Blanchard, 1972, p. 174)

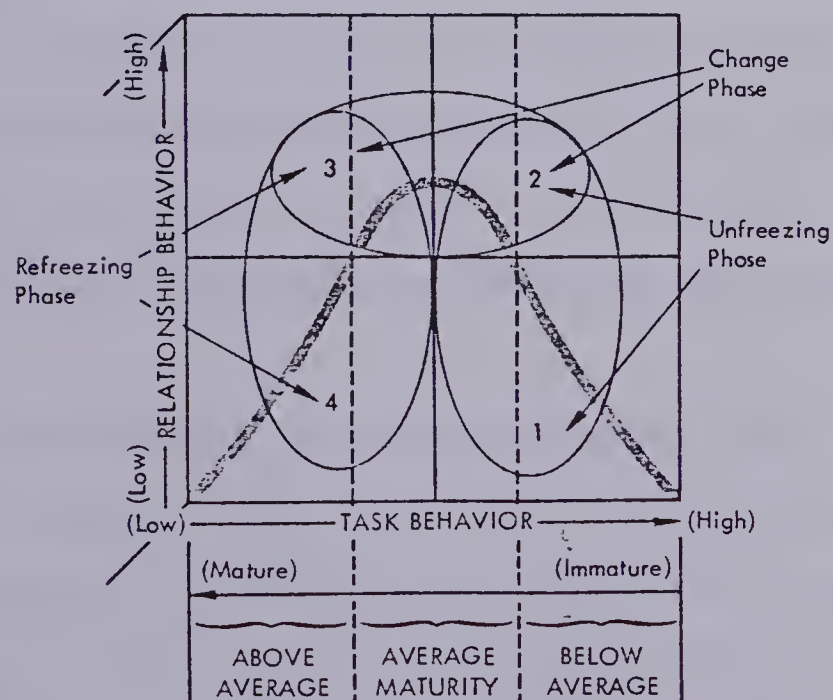


Figure 13. Relationship between Life Cycle theory and the process of change. (Hersey & Blanchard, 1972, p. 178)

Using the behavior modification technique, leader behavior for the change cycle is described as follows:

When working with immature people, at first you tend to cut back on the structure, giving the individuals an opportunity to take some responsibility. When the leader gets the smallest approximation of mature behavior, he immediately increases the socio-emotional support as positive reinforcement. This stairlike process (cut back on structure, then reinforce socio-emotional support) continues until the change or changes start to become a habit as the people mature. At that point, the leader tends to cut back also on reinforcement as he moves toward quadrant 4 and a low structure-low consideration style. (Hersey & Blanchard, 1972, p. 178)

Summary of Psychological Development and Occupational Development

Substantive ideas from the foregoing review when considered in relation to the earlier reviewed literature on psychological development enable the statement of two related propositions: (1) occupation represents a central means through which the innate predisposition of the organism to proceed toward maturity can be realized; conversely, occupational experience may play a key role in the arrestation of development and the demise of indigenous individual motivational dynamics; (2) there exists a parallel, dynamic interactive relationship between progression toward psychological maturity and progression toward occupational maturity.

Among the many potentially relevant issues raised in the foregoing review of literature, a few general observations merit mention at this point.

Noted is the similarity between characterizations of worker maturity as expressed by Argyris (and as indirectly implied in the Herzberg model) and characterizations of psychologically mature and less-than-mature persons as posited by the structural developmentalists.

The role of environment appears central in many of these theories (cf. Hall, McGregor, Argyris and Shon). McGregor's Theory Y and Argyris and Shon's Model II seem quite complementary to Schroder and Hunt's con-

ceptions of the 'interdependent' environment. When development is of central concern, then more embracing would seem to be the 'mechanistic-organismic' continuum model of Owens and Steinhoff.

The delineation of career stages provides another more specific framework for the coordination of person and environment characteristics for the purposes of maximizing performance and facilitating development. According to Schein's tracking model, it is during the early stages of career and immediately before and after boundary passages that the effects of the organization on the individual (socialization) are most potent. And, if one applies Hunt's CL developmental model, it is precisely at these times (the unsocialized stage and the early dependent stage) that developmentally the individual is in need of structure, direction, and supportive distinctive feedback, as proposed by Hunt, Hall, Hersey and Blanchard.

Innovation, according to the Schein model, if it occurs, comes later in passage and between boundary transitions, a point also predictable from the Hunt model. Kaufman's observations that new idea receptivity is more characteristic of the cognitively competent, the more abstract thinker, and the person who possesses a wealth of technical knowledge, would also seem to lend credence to this position.

Frequently noted is that the course of career passage is not always in the direction of constructive worker innovation and maturity. Relevant is Kaufman's inference that when the career is experienced as successful normal growth needs are usually satisfied during the first five years, thereafter they level off and higher, more allocentrically-directed needs emerge. Continuing frustration of the early growth needs into mid-career, according to Kaufman, results in the replacement of these needs by protective-security needs. Such a situation suggests arrested

psychological and occupational development; the stabilizing and debilitating effects of which have been noted by Hall and Schein. Further, one is reminded of the characteristic 'life styles' of Sullivan, Grant and Grant's less-than-mature adults and of Werner's automatized behavior patterns.

Hall's matching model of 'Training needs with career stages' and Hersey and Blanchard's 'Life Cycle leadership-follower' matching model designed to facilitate progression toward worker maturity, appear to be the psycho-social analogues of Hunt's psychological structural model.

It seems to follow from the preceding reviews that in order to develop a specific plan of action for the coordination of occupational and psychological development, one must have knowledge of the organizational structure, the demands of the occupation, and the nature of career passage for that target occupation, in this case, teaching. Attention in this review will now be addressed to such considerations.

Teaching and Development

Some Characteristics of Teachers and the Ethos of Teaching

According to data gathered by Fuller and Brown (1975) the stereotype of the teacher is changing:

The new teacher is younger and less experienced, but better qualified. Still typically a female, more and more of her colleagues are males. She has higher economic status, and is more likely to come from a professional family background and to have an advanced degree. She expresses more commitment to teaching and is more likely to teach continuously with no breaks in service. (p. 27)

These researchers found three distinct sex/age groups within the teacher population. A first group is comprised of older females who have higher social class origins, less preparation, less commitment, and more interrupted service than do older men. Younger males and females, exemplars of the new teacher image, comprise a second group. A third

group is comprised of older males, including administrators, who are lower in class origin and less committed to teaching per se.

Distinct differences have also been found to characterize teachers of different grade levels. Teachers of younger children are warmer, more hopeful, more supportive, less critical, more exhibitionistic, more orderly, more dependent, less bright, more consistent in their views, more directive and teacher-centered, and more encouraging of dependence than are their secondary counterparts (Fuller & Brown, 1975).

Employing a multifaceted approach--historical review, surveys, interviews, and findings from other studies--Lortie (1975) examined the patterns of orientations and sentiments peculiar to teachers. Intensive study of the development and perpetuation of the occupational structure of teaching--patterns of recruitment, socialization, and the system of work rewards--led him to conclude that such processes give rise to characteristic outlooks--conservatism (continuity), individualism (of a muted quality), and presentism. The circle is completed, according to Lortie, "as the structure produces orientations which reinforce it"; the institution becomes self-perpetuating. He found that teachers define their tasks and reflect sentiments congruent with these three outlooks.

Defining Attributes of 'Good' Teachers

Much of the early research on teacher effectiveness was concerned with the identification of personal, universal qualities of the teacher which could be related to pupil growth and contextual variables were usually ignored. In the main, the search has been considered less than successful and the more recent trend has been toward the identification of teacher behaviors associated with student performance (Dunkin & Biddle, 1974). A few stalwarts still insist that competent, effective,

good teachers can be identified on the basis of personal characteristics, that these characteristics are manifest in teacher behavior.

That there are pervasive, consistent differences in teachers seems well documented. Ryans (1960) used rating scales in the identification of differentiating characteristics and then validated these against several presage, context, and process variables. The factors so identified were: teacher warmth (understanding), teacher responsibility (businesslike classroom conduct), and teacher stimulation or imaginativeness.

Gage (1973), on the basis of a review of the voluminous literature to date on teacher effectiveness, concluded that the following four attributes are valid in terms of identifying effective teachers: warmth (as evidenced in approving, accepting, supportive behavior based on respect for, trust in, and liking of others); indirectness (Flander's conception plus the 'guided discovery' approach to instruction); cognitive organization (reflects the teacher's grasp of the content); and enthusiasm.

Rosenshine and Furst (1971, 1973), who used category systems to monitor teacher and student behaviors, identified nine teacher variables which related to student achievement: clarity, variability, enthusiasm, task-oriented and businesslike manner, criticism (negatively related), indirectness, provision for students to learn criterion material, use of structuring comments, and multiple levels of cognitive discourse.

In a summary of major research on teacher effectiveness, Klausmeir (1975) states:

During actual teaching, knowledge of the subject matter, being warm, understanding and friendly, being responsible, businesslike, and systematic, being stimulating, imaginative, and surgent, and being enthusiastic and flexible have consistently been found to correlate

positively and moderately high with teaching effectiveness as rated by observers or as assessed by measures of student achievement and attitudes. (p. 180)

And, Klausmeir concludes

A warm, effective environment can be maintained in an organizational context characterized by a businesslike approach to instruction, orderliness, flexibility, and fairness. This kind of emotional climate and organization, combined with a variety of particular objectives, produces high student achievement, emotional security, and zest for learning. (1975, p. 192)

Qualifications with respect to a general acceptance of the teacher attributes as described in the foregoing accounts have been noted. For example, Popham (1971) states that in the achievement of narrow instructional goals

There is clear evidence that widely divergent instructional tactics can be used to promote identical instructional goals. For one teacher a nondirective approach may be ideal, while another teacher might find a highly directive approach preferable. Yet, because of their idiosyncratic personalities, prior experiences, and other variables, both teachers' approaches may be equally effective. (p.599)

In a similar vein, Averich, Carroll, Donaldson, Kiesling, and Pincus (1972) note that

A teacher who works well (is effective) with one type of student using one method might be ineffective when working with another student having different characteristics, or when using another method. (p. 12)

Andrew (1974), with respect to teacher competence, makes the following observation:

The competencies needed for effective teaching may not exist separately; the successful teacher may be the one who can utilize a variety of skills . . . Effectiveness is really the unique combination of competencies. (p. 35)

Humanistic conceptions of the 'good' teacher similarly look more broadly at student growth and include affective and motivational influences. According to Hamachek (1969) 'good' teachers can be differentiated for 'bad' teachers with respect to the following:

1. Personal attributes--'Human' teachers possess a sense of humor, are fair, empathetic, and democratic; they relate well to students; they are open, spontaneous, and adaptable to change.
2. Instructional and interactional styles--Good teachers range over a continuum of interactional styles; they are sensitive and responsive to the situation and to the student's point of view; they personalize their teaching; are innovative, skillful in questioning, knowledgeable; they use a conversational style; provide study helps and use credible examination procedures.
3. Self and other perceptions--Good teachers see themselves positively, they are optimistic and self-accepting; they hold positive views of others and see students as capable individuals.

Thus, concludes Hamachek, a 'good' teacher is a 'total' (well-developed) person; he is flexible in that he has available and can use a wide variety of teaching skills.

Although studies bent on discovering a personality trait predictive of teacher behavior have been somewhat less than successful, there appears to be one exception in the work of Harvey and his colleagues (Harvey, Prather, White, Adler, & Hoffmeister, 1966; Harvey, Prather, White, & Hoffmeister, 1968). Stemming from Conceptual Systems theory, their study indicated that, in a population of kindergarten teachers, teacher abstractness-concreteness was related to both teacher behavior and certain dimensions of pupil behavior. More specifically, they found that:

1. "More abstract teachers were warmer, more perceptive of children's needs, more flexible in meeting needs, maintained more relaxed relationships with children, encouraged greater responsibility, freer expression of feelings and creativity, were less rule-oriented, invoked unexplained rules less often and were less punitive than more concrete teachers" (Beller, 1973, p. 585).
2. "Greater abstractness . . . was accompanied by greater involvement, greater cooperation, more activity, less nurturance seeking, higher achievement, greater helpfulness and less concreteness on the

part of the students" (Harvey et al., 1968, pp. 161-162).

3. The highest and most consistent correlation was found between student factors and the teacher's needs for structure-order. Teacher resourcefulness showed a significant positive correlation with student behaviors while dictatorialness and punitiveness correlated negatively with student behaviors (Harvey et al., 1968).

Information on the teachers showed that they did not differ on level of education, kind of degrees held, or years of teaching, so it was concluded that the results could be "parsimoniously and directly" attributed to differences in teachers' "belief systems" (Harvey et al., 1968).

Attracted by Conceptual Systems theory, Joyce and his colleagues at Columbia have probed the relationship between level of abstractness and teacher behavior. Inspired by an earlier study by Joyce which suggested that conceptually more abstract teachers helped children define and advance problems and were more integrative in their contacts with children than were more concrete teachers, Joyce, Lamb, and Sibol (1966) followed with another study. Here it was found that in responding to data related to decisions regarding diagnostic and remedial measures for children, abstract teachers assumed more definite positions as they received more information whereas concrete teachers did not--a finding that the authors attributed to be a result of the greater stress involved in remedial positions, concrete persons exhibiting low stress tolerance.

In a collaborative study, Hunt and Joyce (1967) investigated the relation of CL to the initial teaching style of freshmen trainees. They found the higher the CL, the greater the occurrence of reflective teaching (as contrasted with 'digestion and regurgitation'). (Not surprisingly, few subjects scored high on CL.)

Similarly, Murphy and Brown (1970) used the Joyce and Harootunian (1967) observational scale (as used by Hunt and Joyce above) to study

level of conceptual complexity (as defined by the Harvey, Hunt, and Schroder model, 1961) and student teaching patterns. It was found that with increasing teacher abstractness, teachers increasingly helped students to theorize and express themselves and were more encouraging of student search behavior. System 1 teachers were high on questioning for precise answers; System 3 teachers were high on sanctioning group relations. (The System 2 pattern did not occur in the sample.)

Joyce now views CL as representing potential for teaching effectiveness, effectiveness being defined in terms of an extensive, accessible repertoire of skills and styles (Joyce, Weil, & Wald, 1973). Hunt, on the other hand, holds that CL development is a legitimate goal of education and that teacher effectiveness should be viewed in terms of the accomplishment of that objective.

Characteristics of 'good' teachers are frequently discussed in reference to the demands to be made on the teacher by the directions education might take in the future. Rubin (1971b) notes that with the demand of individualization of instruction, "the bench-mark of master performance will lie in an extensive repertory of technique" (p. 270). Bush (1971) also stresses the necessity of an extensive repertory of skills in order for the teacher to cope with the demands of 'heuristic' teaching (in the Brunerian sense). But continual effectiveness, according to Rubin, requires an endless desire on the part of the teacher to become more adept. He labels such teachers 'self-evolving' (Rubin, 1971). Similarly, Horton and Horton (1974) speak of self-renewal as constituting the foremost characteristic necessary for teachers of the future. The teacher most likely to be self-renewing, according to these educators, will: (a) be receptive to and able to cope with the "ambiguities and

vicissitudes" of contemporary life; (b) be highly sensitive to the needs and feelings of others, hold a positive concept of self and others, be confident of his ability to cope, believe that he is the architect of his own destiny; (c) be independent in thought and action; (d) be skilled in communication; (e) be able to make rational decisions about his own learning; (f) view life in a broad context and celebrate life; and (g) be committed to democratic principles of the highest level (Horton & Horton, 1974, pp. 111-112).

In sum, there appears to be a relation between psychological maturity, as discussed in the first section of this review, and the posited characteristics of 'good' teachers. Another way to probe teacher maturity is in respect to professional development, as suggested in the previous review section.

Stages of Teacher Growth and Development

Katz. Based on observations of kindergarten teachers, Katz (1972) has conceptualized four stages of growth "linked generally to experience gained over time". Briefly, after resolving the stage 1 survival concern, the teacher enters stage 2, consolidation, where she is ready to "consolidate the gains made . . . and begins to differentiate tasks and skill to be mastered next". It is during the next stage, perhaps during the third or fourth year of teaching, in which the individual experiences a need for new ideas and stimulation, a need for renewal and refreshment. Stage 4 is one of maturity, the concern is now with deeper and more abstract educational questions. Individuals may vary greatly in duration of stay in each stage. These stages together with projected training needs are summarized in Figure 14.

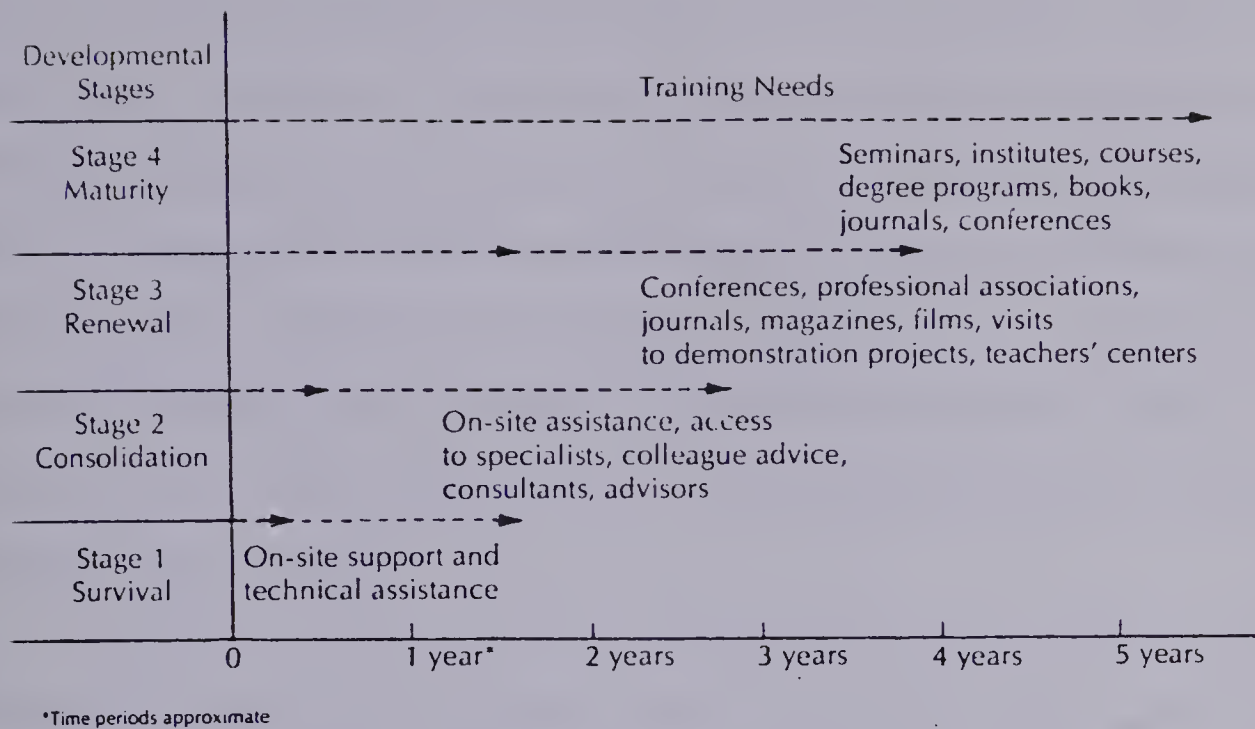


Figure 14. Stages of development and training needs of preschool teachers. (Katz, 1972, p. 51)

Fuller. Another sequence of professional progression is outlined in Fuller's developmental concerns model (Fuller & Case, 1972). The sequence of concerns through which most teachers progress is shown in Table 10.

Table 10
Levels of Teacher Concerns

Phase I--Concerns about Self
Level 0--Concerns unrelated to teaching
Phase II--Concerns about Self as Teacher
Level 1--Where do I stand?
Level 2--How adequate am I?
Level 3--How do pupils feel about me? What are pupils like?
Phase III--Concern about Pupils
Level 4--Are pupils learning what I'm teaching?
Level 5--Are pupils learning what they need?
Level 6--How can I improve myself as a teacher?

Adapted from Fuller & Case (1972)

Phase III concerns are with pupil needs. Level 4 indicates concern with pupil gain in knowledge and processing skills, with teaching methods, and evaluation of pupil learning. Level 5 indicates concern with the

needs of pupils as persons and relevant teaching methods. Hall and Jones (1976) see teachers at this level as searching for and receptive to information and procedures that will help them to individualize instruction. Level 6 demonstrates concern with learning, learning conditions, and the interpersonal influence of the teacher. Hall and Jones (1976) see these teachers as being most amenable to trying out alternative ways of instruction if there appears to be "some predictable degree of pupil satisfaction evident".

It should be noted at this point that there seems to be a rather compelling parallelism suggested between the Fuller model and the Adam's model (as reviewed in the section on occupation)--self as a result of the situation, self as part of the situation, and self as instrumental in the situation.

The Katz and Fuller models suggest the relevance of matching professional socialization programs to the level of development of the participants. It is toward a consideration of socialization--programmed (preservice and inservice) and situational (institutional)--and the efficacy of such socialization that discussion will now be centered.

The Socialization of Teachers

As discussed earlier in this section, Lortie (1975) concluded from his intensive study that the processes of recruitment, socialization, and the system of work rewards in teaching lead to the characteristic outlooks of conservatism, individualism, and presentism in the teaching profession. This section of the report will examine in more detail the relationship between participant characteristics and the processes of socialization.

Entrant characteristics and preservice socialization. Lortie (1975) discerned five attractors to teaching: the interpersonal (working with

children), the 'valuable' service attraction, the opportunity to continue a personal attraction to schooling, certain material benefits, and compatible working schedules. These attractors give rise to certain propensities, as described by Lortie:

There is a reiterated emphasis on conserving the past rather than changing educational institutions, implicit in the themes of service and continuation. The tendency of teachers to stress the interpersonal suggests conventionality rather than a special, deviant point of view; the operation of time compatability is probably indirectly conservative. (1975, p. 33)

Noting that facilitated entry through highly accessible training and "nonelitist admission policies" has resulted in much self-selection and diversity within the teaching population, Lortie proposes that such a recruitment system has fostered a conservative orientation among entrants. Not only does the system encourage those who have only a limited interest in the affairs of teaching but also it appeals to people favorably disposed toward the existing system. Thus recruitment policies lead to reaffirmation, to sustained stability. Such a speculation is reminiscent of Stern's thesis that institutions evincing certain environmental press characteristics tend to attract students whose need patterns are personalized versions of the prevailing press.

Conditions of entry then are thought to play an important role in socializing aspirants to teaching. Additionally, according to Lortie, the "apprenticeship-of-observation" which, from the vantage point of the students, serves to familiarize the aspirant with the tasks of the teacher and fosters identification, does not however "lay the basis for informed assessment of teaching technique or encourage the development of analytic orientations toward work". Preservice experiences, concludes Lortie, lack the impact necessary to offset the conservative influences of the individualistic and traditional experiences. As a further indication of

the prominence of the self-socialization process, both Lortie (1975) and Fuller and Brown (1975) note the general depreciation of formal socialization by both neophytes and experienced teachers.

Fuller and Brown (1975), in summarizing research regarding changes in teacher trainees, state:

Education students have been found to become more likely to recognize individual differences among pupils, to become more positive toward young people, and to become more committed to teaching as a career. Most studies, however, find few benefits and many noxious effects, particularly during student teaching. Student teachers become more impersonal, more negative, rigid and authoritarian, and change from a humanistic to a custodial approach, stressing bureaucratic order and control. (pp. 41-42)

Miller (1974) found students to be more child-centered than did classroom teachers although both groups perceived themselves as more child centered and tender-minded than the system. Wragg (1974) notes that research seems to indicate that attitudes show a movement towards child centeredness during training but by the end of the training period become similar to those current in the school.

McLeish (1970) concluded from his research on student attitudes that while changes in pedagogical and procedural preferences can be modified or even created by teacher training, "the more deeply held personal values or 'life philosophies' remain intractable".

The rarity of personal transformation seems exemplified in a longitudinal study by Olmsted, Blackington, and Houston (1974) of teacher trainees. On the basis of entering data, four entrant stances were identified: seekers of security, authority, achievement, and self-actualization. Following completion of internship, seven teacher stances were identified: the child focuser, the pragmatist, and the task focuser, with commitment viewed as the central organizing factor; the contented conformist and the timeserver, with the 'job' orientation as a central

theme; and two other stances--the ambivalent and the alienated. Of the relation between entering and exit stance, Blackington and Olmsted state:

They exited . . . having more or less shaped their work as teachers to their original ideas about teaching . . . The security seekers become in order of likelihood, time servers, dropouts, contented conformists or alienated. The authority seekers become . . . contented conformists, time servers, task focusers, or ambivalents. The achievement seekers become . . . pragmatists, task focusers, ambivalents, or child focusers. The self-actualizers become . . . child focusers, dropouts, alienates, or pragmatists. In fact, if significant change--as contrasted to elaboration--occurred, it was in the direction of fragmentation, disillusionment, and destruction of the belief system . . . without that belief system being replaced by an integrated alternative system of beliefs. (1974, p. 107)

Thus, in the opinion of these researchers, preservice changes are attributable to selective elaborations dictated by the original entering stances. In view of Kaufman's observation regarding the currency of strongly motivated people (as discussed in the section on work), it would seem reasonable to suggest the efficacy of selective criteria related to the child focuser, the pragmatist, and the task focuser. Related here is Cogan's (1975) lack of optimism regarding the possibility of developing 'self-renewing' characteristics in people who arrive in teacher training programs with minimal evidence of such qualities. Edgar (1974) feels that one of the reasons for the lack of success of most preservice programs is the over-reliance on a predefinition of the 'good' teacher to the neglect of the individual trainee's needs and values.

Joyce and his associates have deliberately built into their preservice program a consideration of the individual personality in terms of Hunt's CL. The program is geared to facilitate structural development of the trainee through the use of Hunt's developmental model (optimal match/mismatch) and behavioral effectiveness through content designed to develop repertoire and flexibility.

In early research concerned with development of an instructional

flexibility program component, Joyce, Dirr, and Hunt (1968) found that individuals seemed to be differentially affected by the training procedures. More recent publications (Joyce, 1972; Joyce et al., 1973) claim that flexibility training does increase functional repertoire. Hunt (1970) and Heck (1968) report increases in post adaptability training scores on Hunt's Adaptability Index--an instrument designed to measure "skill in modulation from one environment to another under appropriate circumstances".

As reported earlier in this section, Hunt and Joyce (1967) found a relationship between initial student teaching style and CL. Joyce (1968) reports that as the program progressed, the differences disappeared but then reappeared toward the end but with less strength than originally. More recent studies (Joyce et al., 1973) have led to the suggestion that conceptual flexibility seems related to acquisition of repertoire or ability to embrace a variety of models and techniques of teaching.

That such a program can induce behavioral flexibility seems to have been tentatively demonstrated, whether it induces structural elaboration seems not to have been ascertained.

Institutional socialization. It is generally conceded that teachers carry on their work in a bureaucratic organization (Anderson, 1968; Goodwin, 1977; Owens & Steinhoff, 1976). The context of socialization is summarized rather succinctly by Goodwin (1977)

Schools are commonly termed bureaucratic as a synonym for settings that thwart teacher creativity, reward conformity, reduce teachers to compulsive rule followers and increase insulation from clients.
(p. 5)

Similarly, Owens and Steinhoff (1976) comment that such bureaucratic organizations as the school are not only not likely to provide "even highly innovative people with opportunities to perform in innovative ways" but will also tend to strongly mold neophytes in its own "enduring

image" (p. 35). Cogan (1975) also speaks of the "levelling, homogenizing forces operating in schools" upon the personalities of entrants.

Morrison and McIntyre also laud the efficiency of the school training system. Of the novice period they comment:

It is probably during this period that one's basic teaching skills are acquired, but the skills which are acquired in these circumstances tend to be directed towards the maintenance of social control and towards 'getting on with the work', goals which are most readily achieved in ways which are not likely to be most effective for achieving longer-term teaching objectives. (1973, p. 84)

Lortie (1975) notes that one striking feature of teaching is the abruptness with which full responsibility is assumed; another is the lack of distinctive feedback on how well the novice is doing. The novice must learn to cope, as noted by Katz.

The beginning teacher, according to the findings of Eddy (1969) and Fuller and Brown (1975), learns to cope by seeking advice from the older group of teachers (as discussed on page 7)--a situation seemingly related to the mentor role in life structure theories (see Levinson, page 17). Such advice is given in respect to such things as how to handle clerical work, how to deal with the principal, when and when not to complain, and numerous tips are offered on how to keep the class busy and in order. Fuller and Brown (1975) suggest that it is probably the best novice teachers, the ones for whom preservice 'takes', the most "altruistic, committed, realistic, and prepared", who suffer most at this time.

Discussions with teachers of five or more years of experience led Sarason (1971) to conclude that (a) many had lost their original interest and zest for teaching, (b) many felt they were as competent as they ever would be, and (c) although many were taking advanced courses, it was to satisfy a need for intellectual stimulation and horizon expansion and they did not perceive these courses as relevant to their teaching.

With respect to teacher respect for the theoretical, a study by Hotyat (reported by DeLandsheere, 1974) addressed the question: Do teachers place more confidence in practical suggestions by valued colleagues, in an official statement of a new principle, in the results of experiments, or in a revision of the objectives of education and teaching? Results from 1,357 teachers from all levels (excluding universities) indicated, regardless of age, sex, university trained or not, that the suggestions of colleagues were by far the most valued. Thus, concluded DeLandsheere, teaching is still unwilling to emerge from the "rule-of-thumb" stage. Lortie observed the same sentiment among his teachers.

Lortie (1975) also observed that with respect to goals, teachers rely heavily upon personal convictions (which are heavily influenced by past experience) and obtain high satisfaction from outcomes that are less than universalistic; with respect to change, they prefer "more of the same"--remedies lie in changing the environment, not in finding more efficacious ways to instruct. They seem preoccupied, notes Lortie, with an "unleash me" attitude and with the availability of resources--a concern which is reminiscent of Herzberg's no-growth 'hygiene' factor.

Thus, according to Lortie, presentism is reinforced by teachers' perception of psychic rewards as "scarce, erratic, and unpredictable"; the lack of standard techniques coupled with the "sink-or-swim" inductory socialization encourages a hesitant, uneasy, isolated individualism; and teaching problematics plus the lack of a reassurance structure may lead to a level of anxiety that serves to reduce innovation and may well lead to conformity. (It should be noted at this point that such a suggestion seems consonant with recent research with respect to the conservative and debilitating effects of stress generally.)

The pervasive effects of institutional socialization are also suggested by the findings of Goodlad (1976) in his search for evidence of the implementation of "frequently discussed and recommended practices for schooling". Tradition was found to predominate in that it was not the 'how' but the 'what' to learn that was central in the classroom, student exercises were teacher determined, the textbook predominated, instruction was primarily with the total group, there was little use of learning principles, interaction was predominantly teacher-child, and so forth.

Thus, it appears that not only does anticipatory socialization fail to offset personal predispositions and inductory institutional socialization effects but also continuing professional socialization has been less than efficacious in altering the traditional ethos of teaching, in counter-acting contextual impact. It is toward a consideration of programmed inservice socialization that attention will now be directed.

Inservice professional socialization. In spite of the fact that little has been reported in respect to well-conducted evaluations of specific inservice programs, there seems to be a consensus of opinion that such programs as presently conceived, have lacked effectiveness in changing teaching style (Wragg, 1974), a sentiment not inconsistent with the immediately foregoing discussion. Owens and Steinhoff (1976) caution that we forget the "systemic nature of the organization and confuse individual change with change in organizational functioning". Training the individual, they feel, may be helpful to him as an individual but once he is again enmeshed in the ongoing social system there is little effect of such training.

Jackson (1971) attributes such program failure, at least in part, to the 'defect' approach--the need for repair and remediation--that has dominated these programs. He feels that such an orientation results in an

emphasis on the molecular aspects of teacher behavior and serves not only to reduce the range of a teacher's choice but also de-emphasizes the rationality behind his actions. Cogan (1975) comments that inservice has bombarded the teacher with 'come-and-go' innovations, the result of which has been "fatigued, disillusioned, and cynical" teachers.

Again, Lortie (1975) notes that inservice efforts have been minimal, not well developed in the teaching profession.

That there is a need for continuing professional socialization seems uncontested (Bush, 1971; Lortie, 1975; Rubin, 1971a); the present search seems to be for new directions, new orientations to guide such attempts. One such direction has taken the form of institutional development, the thrust of which is to shift the institution and its administration to a more organic mode of functioning (Owens & Steinhoff, 1976). Another direction, at present independent of the first, derives from studies of the professional growth of teachers (as discussed in this section) and thus advocates teacher growth-oriented programs.

Growth oriented inservice. According to Jackson (1971), the central goals from a growth oriented perspective would be to (a) progressively sensitize the teacher to what is happening in the classroom and (b) support his efforts to improve on what he is doing. From the perspective of the teacher, the motive for learning more about teaching would be to gain greater fulfillment as a teacher, seemingly a psychologically sound goal.

With respect to professional training, Rubin (1971a) states the problem in this way:

We must . . . devise some system through which we can help teachers acquire the skills with which to accomplish a particular goal, in a particular educational setting, with a particular kind of learner . . . Hence, one of our crucial problems is to invent procedures

through which professional growth can be personalized, allowing teachers to cope with their own idiosyncratic needs, to begin at their own level of sophistication, and to progress at their own optimal rate. (p. 250)

Bush (1971) strongly recommends the adaption of 'heuristic' methods of inservice education and the necessary tailoring of such programs to fit the precise needs of specific individuals and groups.

Toward the end of personalizing training, Fuller and Brown (1975), drawing upon Lewinian concepts, have elaborated a change model in terms of a conceptualization of the teacher's life space (see Figure 15).

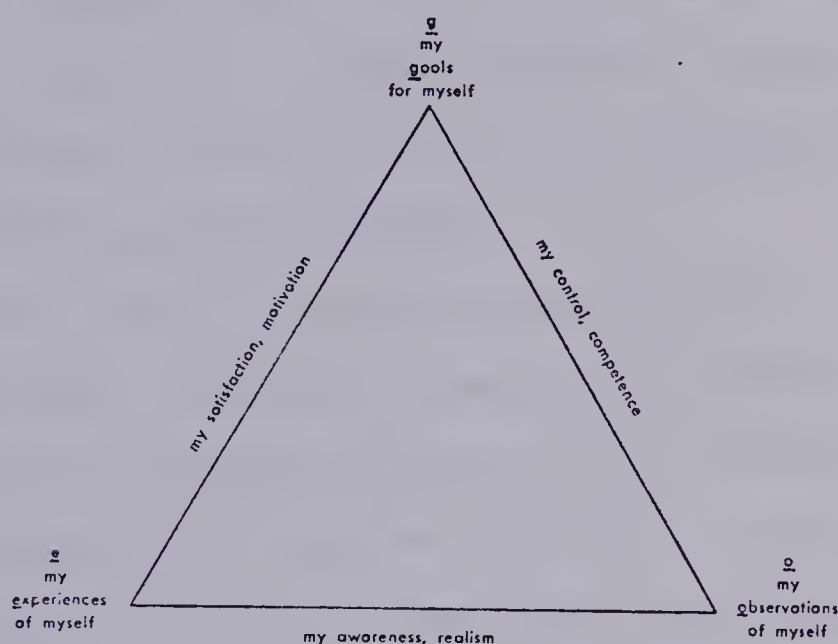


Figure 15. A representation of the teacher's life space
(Fuller and Brown, 1975, p. 43)

Change, according to this model, involves the reduction of discrepancies between and among the teacher's ongoing experience, her goals, and her perceptions of the observations of others. Reducing discrepancies between 'experiencing' and 'goals' leads to satisfaction; between 'experiencing' and 'observations' leads to greater congruence or genuineness; and between 'performance' and 'goals' leads to increased self-control. It is suggested that there needs to exist some optimal level of discrepancy before changes become evident (Fuller & Manning, 1973). Using the Lewinian concept of change--unfreeze, change, refreeze--

discrepancy reduction is defined in terms of four major instructional processes (Fuller & Brown, 1975, pp. 44-45): (1) assessment; (2) awareness (sensitization of subject to his own experiencing, his observations of himself, and to reasonable goals); (3) arousal, confrontation, disruption (identification of discrepancies, awareness of the need to change; and (4) resources, remedies, and change.

In relation to the three levels of the developmental 'Teacher Concerns' model, Fuller and Brown (1975) stress corresponding types of confrontation: self confrontation, performance confrontation, and impact confrontation. They suggest the appropriateness of impact confrontation at the inservice level because it provides more sophisticated goals and a "route to autonomous self-improvement".

The effects of growth oriented programs have yet to be defined and measured empirically. In respect to capacity for behavioral flexibility, Joyce (1975) found that inservice teachers--even those with an habitual recitation strategy--could learn new strategies even more rapidly than preservice teachers. Do such programs produce central effects? Do they facilitate the development of the self-renewing teacher and an evolving system?

In view of the discussion with respect to institutional socialization, it would seem that occupational context--and especially the match between the environment and the developmental level of the teacher--must be kept in mind when assessing program efficacy. A further factor, noted by Lortie (1975), to be considered in occupational development is that in contrast with many other careers teaching is 'unstaged', there are no progressions in status within teaching which can occur without shifting to administrative positions.

Having thus far in this report discussed in some detail the literature with respect to adult psychological development and with respect to occupational development, and having noted the somewhat narrow and indiscriminate approach to both teacher as person and teacher as professional that has predominated in the education field, attention will now be addressed to a model designed specifically to coordinate psychological (structural) development with teacher professional development.

The Coordination of Structural Development and Teacher Professional Development

In his concern for facilitating the realization of the developmental goal of conceptual complexity and interpersonal maturity as an educational goal, Hunt (1971b) has realized the necessity of highly trained, highly developed teachers. Toward this end he has formulated a model for teacher training which coordinates teacher effectiveness in terms of teacher behaviors and structural development of the trainee. A basic assumption of this matching model is that "one begins with the trainee--where he is now and his change-relevant characteristics--in order to intervene to produce change" (Hunt, 1971b, p. 70). Following this line of thinking and relying heavily upon the Hunt model, Joyce (1968, 1972) has also developed (and piloted) a teacher training program designed to graduate innovative teachers.

Hunt's Matching Model for Teacher Training

Basic to the Hunt model is his definition of teaching effectiveness.

(Teaching effectiveness is) . . . the capacity to radiate a wide variety of environments, to select from this variety a specific environment to be radiated towards a particular person or group of persons (with the aim of producing a particular behavioral outcome), and to shift from one environment to another under appropriate circumstances. (Hunt & Sullivan, 1974, p. 279)

This definition enables and leads to the specification of training

objectives as described in Table 11. Individual level of competence in these skills determines the content (what he needs to learn) and the trainee's aptitudes or "accessibility" characteristics determine the form of the intervention program (see Table 12).

Table 11

Hunt's Teacher Training Objectives

Objective	Definition of Objective		
Skill in discrimination	To discriminate between environments	To discriminate between behaviors	To discriminate between persons
	$E_x / E_y / E_z$	$B_1 / B_2 / B_3$	$P_I / P_{II} / P_{III}$
Skill in radiating environments	To radiate a variety of environments	To radiate that environment which will produce a specific behavior	To radiate that environment which will produce a specific behavior from a particular person
	$E_x:$ $E_y:$ $E_z:$	$E_x \rightarrow B_1$ $E_y \rightarrow B_2$	$E_x: P_I \rightarrow B_1$ $E_y: P_{II} \rightarrow B_1$
Skill in flexible modulation from one environment to another	To shift from one environment to another under appropriate circumstances		
	(Time 1) $E_x: P_I \rightarrow B_1$ (Time 2) $E_y: P_I \rightarrow B_3$		

Code: E = Environment B = Behavior P = Person

Source: Hunt, 1971b, p. 53

Table 12

Training Intervention Based on Trainee Accessibility Characteristics

Accessibility characteristic	Prescribed form of intervention
<i>Cognitive orientation</i>	<i>Degree of structure</i>
Low Conceptual level	High
High Conceptual level	Low or intermediate
<i>Motivational orientation</i>	<i>Form of feedback and reward</i>
High social approval	Extrinsic reward and/or normative feedback
High intrinsic motivation	Intrinsic reward and/or self-defined feedback
<i>Value orientation</i>	<i>Value context of presentation</i>
	Within "latitude of acceptance"
<i>Sensory orientation</i>	<i>Modality of presentation</i>
	Adapted to primary sensory "channel" i.e. visual, auditory

Source: Hunt, 1971b, p. 75.

Intervention content. The skills (as designated in Table 11) are arranged in hierarchical order from top to bottom, each skill level being prerequisite to the ensuing level. Thus, before one can radiate a variety of environments he must be able to discriminate between various environments, between behaviors, and between persons. Discriminative skill entails being able to classify environments, having knowledge of different behavioral levels (as in taxonomies), and having knowledge of individual differences. Hunt suggests that knowledge from psychophysics might have implications for the development of procedures for increasing discriminative skill as well as variations of sensitivity training (e.g. Heck, 1968).

Once able to discriminate, the trainee is then required to radiate different environments. Hunt stresses the need to ascertain the preferred or natural style of the trainee (through use of an interactional system) before such training is commenced. Subcomponent skills involve: skill in radiating a variety of environments, skill in producing a specific environment to elicit a certain result, and skill in modulating the environment to produce a specific behavior from a particular individual (symbolized by Hunt as E: P→B). Hunt feels that there are probably many different appropriate procedures for such skill development but that the more complex subcomponents should be embedded in a theoretical network. He has found that discussing student differences in terms of accessibility channels seems to facilitate the teaching of the E: P→B skill. Hunt (1970) has experimented with a prototype communication task which may be potentially useful in both assessment and training of the E: P→B skill. Confrontation with one's performance (bearing in mind that its effectiveness is related to trainee self-esteem as revealed by Salomon and McDonald, 1970) is still another suggested method.

Trainees must also learn to distinguish between functional and developmental goals and their requisite environments. Component 3, skill in flexible modulation--flexing--requires the acquisition of a developmental perspective, a theory of "how behaviors combine in the course of continuous development". Flexing is also required in a group where there is individual differential receptivity to the learning environment. The assessment and training procedures discussed for component 2 may be varied and adapted for training skill in flexing.

Intervention form. Hunt also uses the now familiar Lewinian concept of change--unfreeze, change, refreeze. The first requirement for the intervention process, according to Hunt (1971b, p. 71), is to characterize the trainee in terms which can be directly translated to that mode or form of training intervention to which he is most open or accessible (see Table 12).

The first accessibility characteristic listed by Hunt is cognitive orientation or CL. CL indicates how a trainee will organize and interpret his experience. The related intervention dimension is structural variation which "includes both the structured-flexible dimension or the degree to which the trainee can interact responsively with the material, and the degree of organizational complexity of the material" (Hunt, 1971b, p. 74). Intervention involves modulating the structure of the presentation to the subject's CL as prescribed below.

The higher the trainee's CL, the more likely he is to be accessible through a more complex presentation or one which is interdependent; conversely, low CL trainees are likely to be more accessible through a more structured, less complex presentation. (Hunt, 1971b. pp. 75-76)

Another characteristic, motivational orientation, "affects preference for and reaction to different forms of feedback and reward" (Hunt, 1971b, p. 71). As indicated in Table 12, trainees who evince a high need for

social approval function well under conditions of extrinsic reward and/or normative feedback; trainees who evince high intrinsic motivation function well under conditions of intrinsic reward and/or self-defined feedback.

Value orientation refers to the trainee's feelings, positive or negative, about the intervention material. The most effective training position is thought to be that which is optimally disparate from the trainee's previous position but within his "latitude of acceptance" (the area on the dimension to which the person is open to information). The problem is one of determining an individual's "latitude of acceptance"; the solution to which Hunt (1970) is searching through refinement of his Attitude to Teaching instrument.

Sensory orientation refers to the trainee's preferred sensory modality for receiving stimuli. Where possible, such preferences should be considered in program presentation, according to Hunt.

The Hunt model thus provides a guide for individualizing instruction toward the objective of teacher effectiveness and CL development. Although Hunt seems to have in mind preservice programs, the model would seem to have applicability for inservice socialization as well.

Joyce's Teacher-Innovator Program

The Teacher-Innovator program is based on two assumptions: "First, if a teacher masters the theory and practice of a wide range of models of teaching then his flexibility in teaching and decision-making is increased", and "Second, if the primary mode of teacher education is self-instruction, then the teacher's ability to educate himself--to master and generate new educational forms--is enhanced" (Joyce, Weil, & Wald, 1973, p. 47).

Hunt's matching model is foundational to the program in two ways: it serves as the structural context in which to implement models of teaching

(the core of the program) and it is one of the models included in the content.

Models of teaching (specifications for learning environments) are related to CL in the following ways: (a) they provide an operational basis for describing the goal of CL development (to increase the range of learning style); (b) they have been described in terms of their degree of structure and task complexity and are thus differentially suited to different CL's, as shown in Table 13; (c) the interaction analysis system used to describe the models was devised with "an aim to detecting CL relevant responses" and so the various levels of information processing in the objective coding system have the same theoretical basis as the different levels of CL; and (d) CL has been found to be an index of flexibility in teaching or "learning to learn" models of teaching (Hunt, Joyce, Greenwood, Noy, Reid, & Weil, 1974, p. 21).

Joyce and his colleagues have found three instructional skills to be requisite to the acquisition of certain models: structuring--the ability to "negotiate, to direct, or to facilitate student control, whichever is appropriate"; modulating cognitive level--"to establish a certain level of intellectual activity and change it when appropriate"; and focussing--used to draw, maintain, or shift the student's attention to target aspects of the subject (Joyce et al., 1973. pp. 49-51).

In order to reach the world of the learner, according to Joyce (1972), teaching must be adjusted to "the competence of the learner and his preferred modes of working". Thus, another key component of the program is flexibility training--an attempt to sensitize the teacher to the world of the learner and modify his behavior accordingly.

Modulation to the characteristics of the trainee is provided for in

the following ways. A self-administering instructional system allows for self-pacing in skill mastery. Modulation to accessibility characteristics is the responsibility of the faculty member as he works with small enquiry groups. He may modify the amount of structure and task complexity for the individual; he may provide authority feedback accordingly and arrange for peer judgment when required. Joyce's concern is with providing a controlled optimal mismatch environment to induce growth, an environment where "the amount of structure is somewhat less and the amount of task complexity is somewhat greater than what is optimal for achievement" (1972, p. 16).

Table 13

Classification of Models by Amount of Structure

<i>Name of Model</i>	<i>Amount of Structure</i>	<i>Appropriate Conceptual Level</i>
1. Inductive (Taba)	Moderate	Moderate
2. Inquiry Training (Suchman)	High	Low
3. Science Inquiry Model (Schwab)	Moderate	Moderate
4. Jurisprudential Teaching (Oliver and Shaver)	High	Low
5. Concept Attainment (Bruner)	Moderate	Moderate
6. Developmental (Piaget)	Can vary from low to high (usually high)	Low
7. Advance Organizer (Ausubel)	High	Low
8. Group Investigation (Thelen)	Low	High
9. Social Inquiry (Massialas and Cox)	Moderate	Moderate
10. Laboratory Method (National Training Laboratory)	The T-Group is exceedingly <i>low</i> structure while the exercises can be <i>moderately</i> structured	High
11. Non-Directive Teaching (Rogers)	Low	High
12. Classroom Meeting (Glasser)	Moderate	Moderate-High
13. Synectics (Gordon)	Moderate	Moderate-High
14. Awareness Training (Shutz)	Moderate to Low	High
15. Conceptual Systems (Hunt)	Varies from Low to High	—
16. Operant Conditioning (Skinner)	High	Low

Source: Joyce and Weil, 1972, p. 305.

Extensive use is made of interaction analysis for self-analysis of behavior.

The model mastery component has been extended experimentally to practicing teachers. Kelly (1974) found that elementary teachers were able

to operationalize the 'synectics' model. Joyce (1975) holds that experienced teachers can master new strategies more rapidly than preservice teachers, or as he states: "Old dogs can learn new tricks and need to."

It would seem that the program content of the Hunt and Joyce models places primary emphasis on the development of teacher effectiveness in terms of behavioral skills while the contextual form of the program concentrates on optimal learning, the development of self-propelled learners, and CL development. There is data to suggest that programs of this type effect behavioral flexibility; do they effect conceptual flexibility? do they facilitate development along the teacher maturity continuum?

Summary: A Theoretical Framework
and Rationale for the Study

As discussed in the foregoing review of literature, psychologically mature people are frequently characterized by personologists and ego psychologists in terms of: openness to experience; flexibility of functioning; evincing a marked capacity for involvement and enriched living; an independent, self-confident, autonomous, responsible, self-actualizing orientation; veridical perception; sensitivity, empathy, and interpersonal effectiveness; and a sense of generativity, purpose, and commitment. Structural psychologists characterize the mature personality in terms of abstractness of thought; differentiated, articulated, and integrated thinking; the multidimensionality and complexity of thought structures; and the use of logical and principled thinking. The behavioral and motivational manifestations of these thought structures are seen to be quite consonant with the functional characteristics described above.

Apparent in the literature is a cautious optimism with respect to

the continuation of development in the adult years. Given a facilitative environment, personologists and structural psychologists have faith in the inherent bent of the organism to proceed toward psychological maturity, to transcend periods of arrest. That occupation represents a central means through which this innate predisposition can be realized or, conversely, that occupational experience may play a central role in the arrestation of development and in the demise of relevant indigenous individual motivational dynamics seems well-rooted in the work of the occupational psychologists and the life-structure theorists.

Frequently noted during the course of the ongoing reviews were the parallel characterizations of life and career passage with passage on the developmental continuum as defined by psychologists, of the mature and immature worker with the psychologically mature and less-than-mature person. Also noted periodically was the explanatory (predictive) power of structural theory, in particular of the Hunt CL matching model. Level of psychological development would seem to limit career progression in that one may never reach the innovative stage if one fails to develop beyond the 'dependent' stage; thus, the importance of developmentally inducing (matching) environments during the inductory and novice stages of career passage. Some occupational psychologists, notably Hall, Schein, Hersey and Blanchard, have recognized the problem and have subsequently developed differentiated models to facilitate optimal career passage. (In view of the posited intimate relationship between life passage and career success, such models should also facilitate self-actualization in life passage.) These models, although developed independently, are seen as consonant with Hunt's model of decreasing structure with increasing psychological maturity.

Additionally, one senses in the literature on life passage and occupational passage and particularly in the expositions of Kaufman, where the issue is more directly addressed, that residually 'strong' people (perhaps those who have actualized development at every relevant point in their lives) will likely become innovators (in Schein's sense), they seem able to tolerate and transcend a fair amount of developmental inhibition in their surrounds; whereas the 'weak', so to speak, will tend to become willing or unwilling (disgruntled) followers, arrested in their development toward independence, maintainers of the status quo. It would seem that the larger the number of 'strong' people in an occupation or profession, the more dynamic and innovative should be the organizational climate and, according to theory, this more qualitative climate should in turn facilitate growth-oriented socialization of members, other things being equal. Thus it seems reasonable to suggest that there is a need to investigate ways and means of facilitating the development of strong people in occupations as one means of promoting currency and development of the institution, of facilitating progression on Owens and Steinhoff's continuum from mechanistic to organismic style.

With respect to teacher 'strength', again one is impressed with the functional similarity between descriptions of 'ideal' and 'mature' teachers and those of the mature personality as defined by psychologists. Desirably competent teachers are frequently characterized in terms of being understanding, warm, and empathic; behaviorally flexible; cognitively competent; enthusiastic; committed; and seemingly concerned with educational questions of competence, purpose, and relevance. The 'ideal' teacher would appear to manifest the behavioral characteristics of the structurally mature personality and the mature self-actualized personality.

However, it is unlikely that the development of teacher competence is as simple as the observed overlap between desirable teacher characteristics and characteristics of structurally mature persons would suggest. Lending complexity to the issue is Lortie's observation that unlike the staged careers, as discussed in this review, teaching is unstaged; thus, there are no temporally corresponding career levels in teaching. Rather, the development of professional maturity (competence) is viewed as temporally related to a more qualitative enactment of teaching, as exemplified in the Fuller model. Higher levels of the Fuller model are concerned with issues that rise above concern with one's teacher image and with curriculum; teachers at these higher levels are concerned with the needs of pupils as persons and consequently/subsequently with the relevance of educational environments. But is it not here that the issue of the role of teaching knowledge and the possession or acquisition of technology may be raised? Is it not possible that a teacher who is equipped through training with technology appropriate for the higher level orientations--for example, knowledge and skill with respect to the individualization of instruction--and assuming an environment conducive to such practice, may be functioning at a high level of teacher development and yet remain at a low (dependent level) of psychological development? If so, it would seem to follow that such a 'competent' teacher would be limited in self-renewing abilities. Such issues, along with the observation that there are few exemplars of 'ideal' and/or mature teachers to be found in the teaching population (Howe, 1972; Schultz & Wolfe, 1973) justify concern with exploring the interstices between the state of progression toward psychological maturity and teacher professional maturity.

Figure 16 is a simple conceptualization of the areas of concern and point of departure for the study described herein.

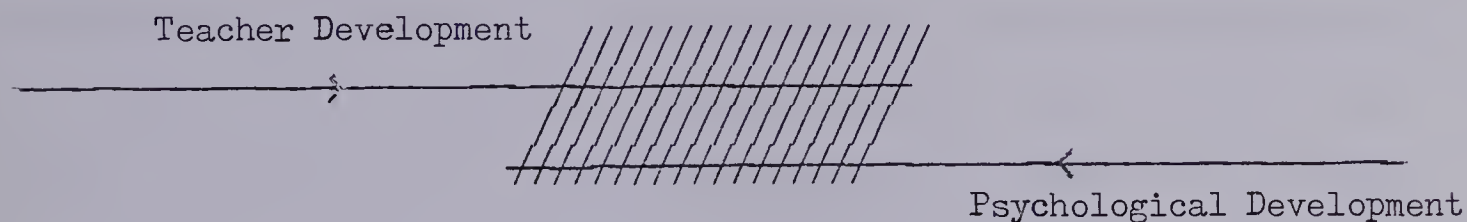


Figure 16. A conceptualization of the problem area of the study.

In view of the fact that the study is probing a virtually unexplored area, it seems reasonable to suggest that the intent of such a probe should be as much with the generation of hypotheses to guide further explorations as with efforts to confirm or question a theoretical position.

As indicated in the previous review of the literature, a model which affords a rapprochement of the two areas--adult structural development and teacher development--is the Conceptual Level Matching Model of Hunt (1971). In addition to its seemingly comprehensive and theoretical adequacy, CL has been linked empirically to teacher effectiveness (in terms of 'desirable' teacher characteristics by Harvey et al., 1968 and Murphy and Brown, 1970) and to capacity to embrace skills for competency (Joyce et al., 1973). Additionally, Hunt has extended and detailed the model to the domain of teacher education thus providing not only an objective for socialization but also some explicit guidelines for the formulation and presentation of teacher training experience.

With technology available then a logical first step or study would seem to be an investigation of the efficacy of an inservice teacher socialization program designed in accord with the Hunt model in relation to inducement of structural elaboration (CL progression) and progression in level of teacher development, as defined and indexed by Fuller and Case (1972). In view of the mentor relationship, the model effect, and

the observation that the new teacher requires a period of experience to 'gear up', so to speak, it follows that in order to enable a measurable contemporaneous experimental effect as well as to maximize more generally any benefits of the experiment through a possible 'ripple' effect, the target population must be comprised of relatively experienced teachers.

Further, it seems important to collect as much descriptive data relevant to the issue as possible in order to enhance or clarify the experimental results and to contribute toward the generation of further hypotheses. In view of these purposes, the rather lengthy and comprehensive review of the literature as presented in this chapter seems quite justifiable.

Having sketched the general theoretical framework and basic rationale of the study attention will now be addressed in Chapter III to a more specific delineation and discussion of the study purposes and hypotheses, definition of terms, and instrumentation.

CHAPTER III

THE PLAN AND CONDUCT OF THE STUDY

As stated in the closing section of Chapter II, the general purpose of the study was to explore the interstices between the state of progression toward psychological maturity and the state of progression toward teacher professional maturity. The intent was as much to enable the generation of hypotheses as it was to question or confirm certain theoretical positions. The study thus involved both descriptive and experimental research.

This chapter will (a) delineate in detail the purposes and hypotheses of the study and discuss the logical and theoretical bases of their selection; (b) describe the research instruments and the rationale of selection; (c) discuss the plan of the study and the derivation of the study groups; and (d) present the details of the conduct of the study.

Purposes and Hypotheses

Specific Purpose 1: To investigate the residing relation between scores obtained on measures of psychological maturity as defined by Conceptual Level theory and as indexed by the Paragraph Completion Method and moral judgment as defined by Kohlberg and as indexed by the Moral Judgment Scale.

As articulated in Chapter II, there appears to be a basic congruence or at least compatability between the different maturity progression models even though they are concerned with different areas of personality development and, in particular, the upper stage characteristics would seem to share a great deal of commonality. This observation would seem to hold with respect to the cognitive models of Kohlberg and Hunt. The empirical evidence of such a relationship is, however, not unequivocal. Whereas Sullivan et al. (1970), in a study of groups of teenagers (twelve, fourteen, and seventeen years of age), found a significant correlation ($r=.34$)

between CL and moral development level (with the effects of age partialled out), Cavanaugh (1976) found that such a positive relationship between the theoretically similar Schroderian conception of integrative complexity and level of moral development did not hold with a sample of college students (effects of age controlled). In fact, he found that "low complexity did not prevent subjects from achieving higher stages of moral development".

The present study provided an opportunity to test the following hypothesis and to examine the consistency of such a proposed relationship across the levels of conceptual development.

Hypothesis 1: There exists a significant positive relation between individual scores on the Hunt measure of Conceptual Level (PCM) and the Kohlberg measure of moral judgment (MJI).

Specific Purpose 2: (a) To investigate the residing relation between scores obtained on the PCM, as a measure of psychological maturity; and scores obtained on the TCS, as a measure of teacher maturity; and (b) To investigate the relation of the scores obtained on the PCM and the TCS to scores obtained on the behavioral index of 'teaching style', the RI.

In the review of the literature the observation was made that there appears to be an overlap between the upper levels on the continuum of teacher development and the upper region--independence--on the continuum of Conceptual Level development. However, the question of the contribution of technical competence to the advancement of what Fuller and Case consider to be maturity in teaching was also raised. Further, although it would seem logical to expect that both the well-developed person and the well-developed teacher would use a more reflective style of teaching than their lower scoring counterparts, the relationship remains virtually unexplored. Thus, through inclusion of the behavioral variable of teaching style, an opportunity was provided to replicate with experienced teachers the sole investigation by Hunt and Joyce (1967) which probed the relationship

between characteristic or usual teaching style and CL with pre-service teachers. As in the Hunt and Joyce study, the indicator of teaching style used in this study was degree of reflectivity--i.e. the comparative use of teacher behavior designed to stimulate higher level student cognitive activity as compared with behavior concerned solely with the reception of information on the part of the students. (It is suggested in the work of Hunt and Noy (1970) that reflective teaching behavior is related to the facilitation of CL progression in students and the implicit implication is that teaching that is persistently at the factual level tends to keep the students at a dependent level of development.) Further, the inclusion of this variable enabled a gentle probe of the relationship between the theoretical and the practical.

Specific Purpose 3: (a) To investigate the relative efficacy of a 'Teacher Enrichment Experience' program treatment, designed to enhance flexibility in teaching, and a simple 'Hawthorne-expectancy' treatment upon inducement of progression in Conceptual Level (as indexed by PC scores) and upon progression in level of teacher development (as indexed by TC scores) and the relation of Conceptual Level (CL group membership) to both PC and TC progression; and (b) To investigate with the Program group (T_1) changes in teaching style, as indexed by the RI (Reflective Index), over the pre-post time period, and the relation of CL group membership to such performance.

In view of the well-known Hawthorne effect and the possibility of the operation of the 'Pygmalion' effect (Rosenthal, 1966), plus the implications of the 'supportive environment', as reviewed in Chapter II, one cannot predict the outcome of the comparison of the two treatments. Also, as indicated in the close of the last chapter, there are as yet no sound theoretical or empirical bases upon which to formulate a hypothesis with respect to the impact of a program designed to enhance conceptual flexibility upon the advancement of teacher maturity, such being in part a purpose of the study described herein.

Further, the opportunity was provided to investigate the impact of a personal-growth oriented inservice program upon teaching behavior in the classroom. Although one would expect a pre-post increment in RI, the design of the study did not permit the testing of this expectation in the form of an hypothesis.

(Ideally, and as was indicated in the original study plan, the purposes of the study could have been more adequately addressed if the contrast group could have been a non-treatment group.)

Specific Purpose 4: To selectively investigate the relation of (a) area (geographic school jurisdiction) to PC, TC, and RI performance for the T₁ group; (b) sex, teacher experience, and teacher training to PC performance for the study groups; and (c) course recency and age to both PC and TC performance for the study groups.

As mentioned in the overview of the study (Chapter I), area or geographic school jurisdiction was not originally designated as a variable of concern; however, upon program commencement it became apparent that there seemed to be differential responsiveness or receptivity, seemingly by area, to the program. Thus, although the design was less than ideal to permit an adequate investigation of the role of this variable, in the interests of serendipity, it was included for whatever consideration was permitted within the confines of the available study data.

Sex of subject, years of teacher experience, years of teacher training, recency of training, and age, are the usual variables investigated or controlled in studies of teacher effectiveness, thus they were so included in this investigation. Following from the review of literature, there was a particular interest in exploring the role of training recency and age.

Specific Purpose 5: To discern and describe group profiles based upon the variables central to the study and directly relevant to the central purposes of the study.

This type of descriptive and summative purpose would seem to follow logically from the foregoing delineation of study purposes. Identification of the groups will depend, in the main, upon the results of the preceding analyses.

Ancillary Purpose 5: To discern and describe age group performance profiles.

Although age was examined as a factor in PC and TC performance in connection with Study Purpose 4, the intent was to now view performance through the lenses of the life-style theorists and thus to sketch age performance profiles for this particular study sample (i.e. select teachers). In addition to PC and TC performance, RI performance will be related to age group.

Reference has been made to the operational definition of some of the variables and it is to a consideration of instrumentation that attention will now be focussed.

Instrumentation and Definition of Variables

Paragraph Completion Method (PCM)

Designed by Hunt and his colleagues to index CL, the Paragraph Completion Method consists of six open-ended sentences about topics related to how one handles conflict or uncertainty and how one thinks about rule structure and authority relations (Hunt, Greenwood, Noy, & Watson, 1973). The subject is required to complete each stem (item) with three or four sentences within a three-minute time limit.

Scores (0-3.0) correspond with the CL stage metaphor. A CL score is obtained by averaging the highest three scores on the protocol--a modified version of the 'high jump' rationale. Scoring requires specially trained raters and is in accord with a 1977 scoring manual (revised edition). According to the manual, trained inter-rater reliability ranges from

.79 to .91 for adult protocols.

With respect to the meaning of the scores, the manual states:

CL is a developmental variable and a CL score, e.g. 2.0, has an absolute rather than a relative meaning. Therefore the variation is expressed in terms of the proportions at each of four levels rather than by standard deviations. (Hunt, Butler, Noy, & Rosser, 1977, p. 38)

These four levels (described in terms of learning style or need for structure) with the corresponding CL scores are shown in Table 14.

Table 14

CL Score-Learning Style Categories

Learning Style	Need Much Structure	Some	Less	Need Little Structure
CL Score	0-1.0	1.2-1.4	1.5-1.9	2.0+

Source: Hunt et al., 1977, p. 39.

Although the PCM is considered useable--in fact, has been used several times--with adult subjects, it must be acknowledged that the manual was developed primarily for use with teenage protocols although adult responses are included. The results (norms) for two separate samples of adult education students (graduates) are given as follows:

Percent of Students Requiring Differing Degrees of Structure*				
	<u>Much</u>	<u>Some</u>	<u>Less</u>	<u>Little</u>
Sample 1	0	14	30	56
Sample 2	3	18	32	47

Construct validity of CL was discussed in the review of literature section. With respect to the relation of CL scores to IQ/ability/ achievement, Hunt reports no significant relation is apparent in homogeneous or older groups of subjects. Observations across earlier age levels leads him to conclude that:

The specific pattern of relation between CL and ability/achievement

* Selected from Hunt et al., 1977, Table 2, p. 41.

is that persons very low in ability/achievement are almost always also low in CL; however high ability/achievement persons vary enormously in CL. This is the major reason why the relation of CL to ability/achievement generally decreases when high school and university student samples are considered since they are less likely to include persons very low in ability/achievement. (Hunt et al., 1977, p. 45)

The nature of the subject and the conceptual level of the task, as discussed in the review of literature on CL, appear to influence the relationship between academic achievement and CL score.

Hunt (1971b, pp. 38-42) notes that middle class subjects generally score higher than lower class although there seems to be more variability in lower class samples; and that females tend to score higher in childhood but that sex differences seem to disappear by adolescence.

The incidence of delinquency has been found to be much higher for low CL scorers. CL scores have been reported to be significantly related to future orientation, non-alienation, and internal control and inversely related to dogmatism and authoritarianism. A positive relation has been found between CL scores and moral maturity scores ($r=.34$); between CL scores and Loevinger's Ego Development Scale scores ($r=.23$); and a general relation (not high) has been reported between CL scores and Sullivan, Grant, and Grant's Interpersonal Maturity Level assessments. (Hunt, 1971b, pp. 38-42)

Hunt (1977, p. 42) cites a report of test-retest reliability of $r=.67$ for a group of college students over a three month period.

Although CL does not change quickly, in a study involving grade nine students where CL facilitation was the focus of a program, significant CL score increases were observed over the course of a school year (Hunt, 1977, p. 51).

Considered in the selection of this instrument for use in the study

was the possibility of encountering a ceiling effect; however, based on a review of the literature, it was felt that this would be an unlikely problem with the target population.

The PCM was used to index CL before intervention and again approximately a year later. All protocols were scored by Ms Rosser, a co-author of the scoring manual, at the Ontario Institute for Studies in Education.

A copy of the Paragraph Completion Method along with scoring criteria for one stem are included in Appendix A.

Teacher Concerns Statement (TCS)

Level of teacher professional development was indexed through use of the Teacher Concerns Statement, a simple measure devised by Fuller and Case (1972) that requires the subject to respond to the question: "When you think about your teaching, what are you concerned about?" Coding corresponds to the six developmental levels of concerns (as discussed on pp. 81,82) and is in accord with A Manual for Scoring the Teacher Concerns Statement (Fuller & Case, 1972).

Although the measure has been utilized* the author of this report is unaware of any published material with respect to validity and reliability other than that originally presented by Fuller (1969). At that time, Fuller reported that with her study subjects, 60-64 percent of preservice teachers' concerns were at the Phase I and II levels whereas 60-64 percent of the inservice teachers' concerns were at the Phase II to III levels. The present study thus provides an opportunity to further explore the use of this instrument with experienced teachers and as a research instrument.

* Personal communication, A. George, Director, The Research and Development Center for Teacher Education, The University of Texas at Austin.

The Teacher Concerns Statement (TCS) was used to index level of teacher development before and after intervention. All protocols were scored by Ms Case, co-author of the scoring manual.

A copy of the Teacher Concerns Statement, an 'Overview of the Concerns Codes', and illustrative examples of one code are presented in Appendix B.

Moral Judgment Interview (MJI)

Originally designed by Kohlberg to derive his stages of moral judgment, the Moral Judgment Interview (with subsequent refined content and scoring) was used to index level of moral development in this study. Although the test purportedly consists of nine hypothetical dilemmas representing conflict between legal-social rules and human needs, most studies have utilized only a few of the dilemmas because, according to Kohlberg (Tracy & Cross, 1973), level of moral judgment can be reliably assessed from fewer items, thus reducing the demands of task administration, responding, and scoring. However, toward the end of deriving maximally discriminant items, Kohlberg seems to be constantly revising both content and scoring. In addition to posing a question of the comparability of the interpretation of results across past studies that have employed the instrument in different forms, as noted by Kurtines & Greif (1974), such a situation presents a real problem to researchers contemplating the use of the instrument. For example, in the planning stages of the present study the most recent available version of the instrument was in a format consisting of two forms: A and B, with two dilemmas each, dated March, 1976. However, upon submission of the protocols to the Harvard Center for Moral Development and Education for scoring, the researcher was informed that an "old" version of the test

had been used and consequently there was a question of score validity.*

(The most recent revision of the test was enclosed, dated July, 1977.)

Although oral interviews conducted by a skilled, specially trained interviewer is the preferred method of administration--a procedure which enables probing and clarification of response--an unpublished guide prepared by the Center states: "Written interviews are adequate for correlational studies using more than 50 to 75 subjects where the subjects are college students, adults, or literate high school students.** Thus it was felt that for the purposes of this study, the written form would be sufficient and most convenient.

Although in the past, different methods of deriving a moral judgment score have been reportedly used (Kurtines & Greif, 1974; Lake, Miles & Earle, 1973), currently (at least with respect to the scoring of the protocols for the study at hand) two methods are used at the Center:

Each issue is scored separately by using a scoring manual. A total score is calculated for each issue where material has been found. Points are assigned as weights depending on whether the score is a pure match or a guess and whether the issue is the subject's chosen or favored issue or not. The scores are then multiplied by the number of weighting points and averaged. This provides a Moral Maturity Score (MMS) which ranges from 100 (pure stage 1) to 500 (pure stage 5). In addition a Global score is also calculated. A major stage is determined by identifying the modal stage of reasoning. If another stage represents more than twenty percent of the subject's reasoning, it is considered a minor stage and is indicated by parentheses. For example, "4(3)" represents a major or modal stage 4 and a minor stage 3. A score of 3/4 represents a tie for modal stage between stages 3 and 4.***

*Personal communication, Dr. Marvin W. Berkowitz, Center for Moral Development and Education, Harvard University

**'How to Interview', unpublished manuscript received from the Center for Moral Development and Education

***Excerpt from a letter received from Dr. Marvin W. Berkowitz, Center for Moral Development and Education

To return to further issues of validity and reliability, interrater reliability for protocols is reported to range from .83 to .93 and test-retest reliability from .65 to .80 (Lake, Miles, & Earle, 1973).

Internal consistency (in terms of correlations across items) seems to have improved from early reports of .31-.75 to correlations in the .80's more recently (Lake et al., 1973). For small samples, predictive validity studies have shown correlations of .72 between scores at age 16 and the mid-twenties; .92 between scores at ages 13 and 24; and .88 between scores at ages 16 and 24 (Lake et al., 1973).

Although Kohlberg has offered some evidence in support of the invariant stage sequence, such evidence is not considered at all conclusive by such an authority as Deanna Kuhn (1976) or by such critics as Kurtines and Greif (1974). Moral judgment scores (however derived) have been found to correlate positively with CL scores, with Loevinger's ego development scores for adolescents (Sullivan et al., 1970) and adults (Lambert, 1972) as well as with Erikson's ego identity status (Podd, 1972). Tomlinson-Keasey and Keasey (1972) found a general relationship between formal operations and moral judgment.

Although Kohlberg's framework does not require that moral reasoning be related to moral action, he does suggest that there should be some relationship. Some such support has been found in studies relating moral development to cheating (Schwartz, Feldman, Brown, & Heingartner, 1969), to student activism (Haan, Smith, & Block, 1968), to obedience (Milgram, 1963), and to teachers' ratings of children's moral consciousness and fair-mindedness (Lake et al., 1973).

Form A of the Moral Judgment Interview was administered to all study subjects prior to intervention. All protocols were scored by Dr. Marvin

W. Berkowitz at the Center for Moral Development and Education at Harvard University.

A copy of the Moral Judgment Interview (MJI), is included in Appendix C.

Reflective Index (RI)

Characteristic or usual teaching style was defined and indexed in the study in the manner of the Hunt and Joyce (1967) study--i.e. through the use of a 'Reflective Index'. From a four-category coding system that had been originally designed by Joyce (Joyce & Harootunian, 1967) to quantify teacher behavior relevant to 'Conceptual Systems Theory', one category--Information--was selected as appropriate for definition of the reflective pattern of teaching. The five sub-categories for 'Handling Information' which, according to Hunt and Joyce (1967) are "ordered roughly on a reflective-structured dimension" include the following:

- I-1 "Helps child evaluate information, raise hypotheses, make inferences, define or advance problems."
- I-2 "Helps child find information "; Asks child to observe or speculate; Helps child toward self-expression.
- I-3 Questions student for precise answers.
- I-4 Gives information (makes statements).
- I-5 Gives conclusions (delivers an opinion, states a criterion, defines a problem).

In the manner of Hunt and Joyce, reflectivity in teaching was defined as the total of I-1 and I-2 behaviors divided by the total number of behaviors coded for the Information category (times 100).

Although lessons can be coded live (Simón & Boyer, 1970), in the present study (as in the Hunt and Joyce study) lessons were taped by the subject and submitted for later coding. The taped lessons were then transcribed and the transcripts coded independently by two trained raters.

A unit of communication was defined as one teacher communication on one topic and addressed to one audience.

An inter-rater reliability of .87 was reported for the Hunt and Joyce study.

Teaching style was rated for the 'Teacher Enrichment Experience' group only, before and after intervention.

A copy of the coding criteria from the Manual for Analyzing the Oral Communications of Teachers (Joyce & Harootunian, 1967), explanatory material on 'Levels of Cognitive Activities' as they relate to the reflective-structured continuum (from 'The Teacher Innovator Interaction Analysis System' descriptive material*), and a sample coded protocol are included in Appendix D.

Definition and Assessment of Other Variables

Information with respect to sex of subject, age, years of teacher training, years of teaching experience, and school jurisdictional area was collected through use of a study registration form (see Appendix E). Information with respect to recency of training was obtained by way of a study ending questionnaire.

Additionally, in regard to the 'Teacher Enrichment Experience' group, observations were made with respect to the facilitative provisions made by the area administration--i.e. in terms of on-the-job time allotted for the study seminars--as one indicator of supportiveness and possibly related to study receptivity.

The 'Teacher Enrichment Experience': Definition

The intervention program, designed in accord with Hunt's matching model for teacher training, was termed a 'Teacher Enrichment Experience'

*Unpublished material received from Dr. B. Joyce, Columbia University.

for the express purpose of conveying the idea that it was a program designed to enhance and enrich the participant's teaching experience. The program is described in detail in Chapter IV of this report.

Plan of the Study

Design and Limitations

Two research approaches were used in this field study: a descriptive, correlational technique was used to investigate the relationship questions as posed in first section of this chapter, and a quasi-experimental technique was used to investigate the efficacy of programmed intervention, as posed in Specific Purpose 3 (see p. 108). Although the original plan called for a more rigorous experimental design, the exigencies of the field situation clearly precluded its implementation and the researcher was forced to resort to the 'nonequivalent control group' design (Design 10) of Campbell and Stanley (1963) which includes pre and post testing as well as the variant self-selection of subjects.

In view of the limitations placed on the study through use of this procedure--in particular, questions with respect to the interpretation of treatment effects--(cf. Campbell & Stanley, 1963; Christensen, 1977) as well as data limitations which may well result from the use of projective-type measures with yet questionable validity and reliability--i.e. the possibility of considerable error--it was felt that it might well be considered an over-extension of the limits of the data to rely solely upon statistical analyses. Thus, although rather elaborate statistical analyses were performed, the descriptive, more qualitative analyses of the data were considered to be more appropriate and contributed much toward a better understanding of the study results.

Solicitation and Description of the Study Groups

The program group. The participants for the 'Teacher Enrichment Experience' were selected in the following manner. The general study plan, including the rationale, was first discussed with the administrator in charge of elementary personnel within the local school jurisdictional areas outside the metropolitan Edmonton area. Response at this level seemed very positive and the administrators cooperated in sanctioning and notifying the prospective schools of the study request and sanctioning arrangements for a similar type meeting with the local school level administrators. At this meeting the school administrators were informed of the purposes and plans for the 'Teacher Enrichment Experience' and participant eligibility criteria. To be eligible for program participation the teacher must, at minimum, be in his/her third year of teaching practice and be in teaching contact with children of the age levels corresponding to grades three through six. The administrator then called an assembly of eligible teachers who had expressed an interest in the program as he/she had briefly described it to them.

The researcher/program director talked rather informally to the teacher groups, discussing with them the Fuller research with respect to the centrality of their position and the lack of distinctive research findings with respect to the effects of inservice programs and then proceeding to an explanation of the 'Teacher Enrichment Experience' (see Appendix E, hand-out page entitled 'A Teacher Enrichment Experience: Overview of the Program'). It was explained that the program had been developed with experienced teachers in mind--teachers with extensive teaching skills--and was so designed to enhance 'good' teaching and, hopefully, to heighten the intrinsic rewards (joys) of the teaching experience.

Participant requirements in terms of the research context of the study were discussed--i.e. the necessity of cooperating with respect to pre and post program questionnaire completions and the submission of taped lessons before and after the program as well as the requirement of a sincere commitment to complete the study. Teachers who so elected to participate in the program then completed a program registration form (see Appendix E).

Thirty-seven subjects were so recruited and distributed as follows: 10 teachers from Area A (4 schools included); 8 from Area B (3 schools); 10 from Area C (initially all in 1 school, subsequently divided into 2 schools); and 9 from Area D (2 schools included). At time of registration the number of participating teachers varied from 2 to 10 per school.

It was felt that the procedures used in subject selection should justify an assumption that the participating teachers were relatively committed professionals--'committed' as defined in terms of willingness to allocate personal resources of time and energy to professional self-improvement with no expectation of 'merit' points.

The comparison group. To ensure group comparability it was deemed necessary not only to recruit equally as committed teachers for the comparison group but also to 'Hawthornize' them in a manner comparable to the program group.

It was the intended plan to recruit comparison group subjects from the more outlying schools within the same school jurisdictions as the program subjects. However, and because initial recruitment efforts had concentrated on obtaining a program group (in order to get on with the program), by the time efforts were directed toward recruitment of a comparison group, news of the program had spread and upon approach to two school staffs there was a definite indication of an unwillingness to

participate without benefit of the program. The following procedure was then instituted.

Consultants/educators/administrators who had contact with teachers in other adjacent school jurisdictional areas were asked to recommend teachers who might be professionally-minded enough to participate in this study group. These recommendations were acted upon by personally contacting the teacher and informing him/her that the communicant (from the University of Alberta) was engaged in a research study involving teachers, that one part of the study was concerned with investigating how teachers think and feel about certain issues related directly or indirectly to teaching and education, and that he/she had been recommended as a person who might make a valuable contribution to such a study. They were informed that they would be asked to complete two questionnaires at this point and again at the end of the teaching year. Of the twenty recommendations received, all agreed to participate. Near the close of the teaching year the comparison subjects were again contacted and asked to complete the questionnaires, the stated purpose of the second measurement being to enable a look at stability and change in thinking and attitude over the course of a teaching year.

Delimitations

The sample of teachers obtained for the purposes of this study was considered to be representative of a larger body of 'committed' teachers--i.e. of a select group of professionals. Specific findings are thus applicable only to the defined group.

Conduct of the Study

The study was initiated in the Spring of 1977 with subjects in Areas A, B, and C, and in the Fall of 1977 with subjects in Area D and in the comparison group. Post testing was concluded in the late Winter and Spring

of 1978 in the sequence of Areas A,B, and C in February and March, and Area D and comparison group subjects in May and June.

Pre and post testing was conducted during lunch and after-school hours. The Paragraph Completion Method (PCM) and the Teacher Concerns Statement (TCS) were administered in one session, on an individual school basis, to all subjects. Pre testing for the program group included another session for the Moral Judgment Interview (MJI). In view of a rather negative response to the instrument from this group, it was felt adviseable to discontinue further use of the instrument. During the intervening period between questionnaire taking and program commencement (10-14 days), the program group subject submitted a tape of a lesson--a lesson with which they felt comfortable and thought was rather reflective of their approach or style of teaching.

The format of the 'Teacher Enrichment Experience' called for an initial time block of about $2\frac{1}{2}$ -3 hours for a core seminar and subsequent shorter periods of time (about 1 hour) throughout the year for short seminars to be held at the pleasure of the participants (about 1 per 'free' teaching month). The researcher had, upon completion of program registration, approached the administration of school area with respect to arrangements for the conduct of the program with the following result. Core seminars for participants in Areas A and D were conducted during school time (either morning or afternoon) with teacher relief from the classroom provided; the Area B core seminar was conducted on teacher private time after school; and in the case of Area C, in lieu of difficulties involved in relieving so many teachers from the classroom in one school, an after school seminar was combined with a dinner paid for by the local school board. All subsequent short seminars were held during lunch or after school hours at the participating school.

CHAPTER IV

THE 'TEACHER ENRICHMENT EXPERIENCE'

Purposes and Objectives

The 'Teacher Enrichment Experience', an inservice program designed by the researcher specifically for experienced teachers, was the mode of intervention used in this study to investigate the possibility of inducing both progression on the Conceptual Level continuum and progression on the continuum of teacher development and to thus probe the interstices between these two states of development.

With respect to the 'teacher training' aspect, the program was based upon the belief of Hunt (1972) that 'ideal' teachers, certainly teachers who possess the requisite technology if not a high level of CL development, are necessary for the purposes of inducing student CL progression and efficient contemporaneous learning. The program was modelled in accord with the guidelines developed by Hunt for the selection of teacher training objectives, content, and procedures. The primary purpose of the experience was to enhance and intensify the teaching experience through a process involving sensitization (with respect to self, the nature of students, behaviors, educational environments, and the inter-relation of these components in the educational experience); exposure to the availability of various kinds of educational environments and behavioral acquisition of selective skills and strategies; and, hopefully, an ultimate selective incorporation and reintegration of knowledge, skills, and ideas at a more functionally competent and personally satisfying level. Thus, it seemed reasonable to expect that with the given program focus there might well be a facilitative effect upon progression on the teacher development continuum as defined and indexed by Fuller and Case (1972).

With respect to the CL development aspect, not only the content of the program with its emphases on enlarging repertoire but also the mode of program presentation, which was based on Hunt's environmental-CL optimal 'mismatch' conceptualization, were so designed for the express purpose of facilitating progression along the CL developmental continuum.

Rationale of the Program

Definition of Teacher Effectiveness

Basic to the program is Hunt's definition of teacher effectiveness:

Teacher effectiveness is . . . the capacity to radiate a wide variety of environments, to select from this variety a specific environment to be radiated towards a particular person or group of persons (with the aim of producing a particular behavioral outcome), and to shift from one environment to another under appropriate circumstances.
(Hunt & Sullivan, 1974, p. 279)

Hunt's Training Objectives

Following from the foregoing objectives, Hunt (1972) generated a framework of training objectives which in turn served as the basis for the selection of experiences for the 'Teacher Enrichment Experience'.

Table 15
Hunt's Training Objectives

Objective		Definition of Objective	
Skill in discrimination	To discriminate between environments $E_x/E_y/E_z$	To discriminate between behaviors $B_1/B_2/B_3$	To discriminate between persons $P_I/P_{II}/P_{III}$
Skill in radiating environments	To radiate a variety of environments $E_x:$ $E_y:$ $E_z:$	To radiate that environment which will produce a specific behavior $E_x: \rightarrow B_1$ $E_y: \rightarrow B_2$	To radiate that environment which will produce a specific behavior from a particular person $E_x: P_I \rightarrow B_1$ $E_y: P_{II} \rightarrow B_1$
Skill in flexible modulation from one environment to another		To shift from one environment to another under appropriate circumstances (Time 1) $E_x: P_I \rightarrow B_1$ (Time 2) $E_y: P_I \rightarrow B_3$	
Code: E = Environment B = Behavior P = Person		After Hunt, 1966b.	

Source: Hunt, 1972, p. 53.

The Selection of Experiences and Mode of Presentation

The theoretical framework of the study provided for three core components which focussed on the development and enhancement of the three training objectives as delineated in Table 15:

Core Component I: Skill in Discrimination

Core Component II: Skill in Radiating Environments

Core Component III: Skill in Flexible Modulation

Thus, in relation to professional training, experiences were selected not only on the basis of their contribution toward the enhancement of knowledge and behavioral repertoire but also on the basis of their contribution to the process of "sensitizing" teachers to "read" students and to "flex" (modulate) to these perceived needs (Hunt, 1976a). The core program components included the following material:

1. Personal sensitization activities or making the "implicit" "explicit". It is the contention of Hunt that "when teachers become aware of their own ideas or theories, they are more able to consider alternate theories" (1977, p. 15).

2. Hunt's Conceptual Level Theory and his matching model. This material provided a basis for the recognition of individual differences beyond the usual age and ability differences as well as provided a basis for the recognition and use of different environments (in terms of structure) and thus for the coordination of P, B, And E.

3. Levels of cognitive activities. Material included here--as related to taxonomies--provided a basis for the recognition and use of different levels of cognitive discourse, learning activities, and learning objectives.

4. Joyce's Models of Teaching. This material served as a substantive basis for the purposes of increasing repertoire and, for the teacher, as a way of differentiating instruction. Two models were introduced as part of the core program, two were suggested by the participants, another participant-suggested model was optional (was not processed by all participants), and a few teachers worked yet independently on another model of their choice.

5. Learning centers and contracting. This material provided still another basis for the coordination of B, P, and E.

With respect to communication of the program, the objective was to "practice what was preached" and conversely "preach what was practiced".

As stated by Hunt,

To preach what he practices, a theorist communicates with practitioners by his actions as well as his words. When you do what you are suggesting others do, you are most likely to influence what they do. This increased effectiveness of a theorist's preaching what he practices may be partly due to his providing the practitioner with an opportunity to "model" or imitate his behavior. However, more important . . . is the practitioner's experience of how a client might feel. (1977, mimeographed copy)

Thus, the program consultant attempted to "read" and "flex" to the needs of the participants, and encouraged and supported their efforts to chart and develop their own personalized programs.

The mode of program implementation was in accord with Hunt's Matching Model relevant to the developmental objective and contemporaneous functioning. An attempt to modulate structure was made through seminar presentations in terms of provision of information, questioning, and suggestion of activities. Modulation of complexity was attempted through sequencing and selection of activities. The intent of such modulation was to keep "the amount of structure . . . somewhat less and the amount of task complexity . . . somewhat greater than what is optimal for achievement" (Joyce, 1972, p. 16).

In keeping with the theoretical ideal, an attempt was made to create an 'interdependent environment' and the expectation was that the participant would get out of the experience what he/she was willing to put into it. Thus, although it was expected that the teacher would make this a 'laboratory' experience (as discussed at time of registration), there was no direct attempt to monitor the extent of idea usage or skill develop-

ment of the teacher in the classroom apart from the feedback provided by the interaction analysis of lesson activity (performed in connection with determining the participant's 'Reflective Index').

The Program: Content and Procedures

Core Component I: Skill in Discrimination

Objective: To enhance the skill of the teacher to discriminate between various kinds of students (with an emphasis on CL discrimination), between various educational environments (with an emphasis on structure), and between various behaviors (with an emphasis on cognitive levels).

Format. Sensitization activities and the conveyance/acquisition of 'new' substantive material was accomplished through a major core seminar (2½ hours duration) and a follow-up individual session with each teacher held within the next 7 to 10 days (approximately 15-30 minutes duration).

Core seminar experiences.

1. Orientation activities: Making "implicit" theories and ideas "explicit". The following are variations of the Role Construct Repertory (REP) test of Kelly, 1955, pp. 219-266.

Pupil classification (The Fox and Lippitt, 1964, adaptation of the REP test). The teacher was asked to write the names of her/his students, each on a separate card, in advance of the seminar session. She/he was then asked to sort the set of cards into as many groups as occurred to her/him as she/he thought about these students (free sorting). She/he was then asked to record the main organizing ideas around which the piles were sorted and to give descriptive titles for each pile. The procedure was repeated about three times in order to exhaust their list of characteristics-in-use. Post activity discussion was at the pleasure of the participants.

Classification of classroom practices (Fox & Lippitt, 1964). The teacher was asked to suppose that a visiting teacher from Russia had engaged her/him in conversation about school practices in this country. She/he was to assume that the visitor knew very little about Canadian teaching practices and was particularly interested in learning about mental health

conditions in the classroom and what the teacher considered to be good conditions. The teacher was asked to list as many ideas as possible for the visitor and, subsequently, to group them and assign priority ratings.

A similar set of cards was then generated with respect to practices and conditions deemed by the teacher to be conducive to effective learning.

The teacher was then asked to note any connections or relationships that she/he could see between the mental health variables and the conditions for effective learning. Discussion followed the notation of such relationships.

Classification of behaviors (Suggested by Hunt & Sullivan, 1974, p. 278). The teacher was asked to respond (list in writing) to the question: "What are those things students do or say that make me feel that I am succeeding?" The responses were subsequently grouped, described, and assigned a priority rating by the teacher. Discussion ensued.

Matching (Suggested by Hunt, 1976b, p. 9). After the teacher had identified her conceptions of students, environments, and behaviors, she/he was then asked to put them in relation to one another in response to the questions: "Which approach seems to work best with this kind of student?" and "What are the likely outcomes from this approach with this kind of student?" Discussion ensued.

2. Substantive material. The orientation activities were followed by an explanation and discussion of Hunt's conception of CL development and his contemporaneous and developmental Matching Models (with accompanying handout printed material excerpted from Hunt, 1975b) and Joyce's levels of cognitive activities (see Appendix D).

3. Bridging activities. The core seminar was concluded with an activity that required the teacher to re-sort her set of cards containing the names of her students according to their learning style or the amount of structure they required in the learning situation.

A brief explanation was given of the role of the taped lesson activity (which had been submitted prior to the seminar), 'models of teaching', and learning centers and contracting in the foregoing concept-

ualization and the ensuing program.

Individual sensitization and feed-back session on teaching style.

The purpose of this session was to alert and inform the teacher of what she/he was already doing naturally, as demonstrated by his/her taped lesson, to facilitate CL development in students. Following a reference to 'levels of cognitive activities', as discussed in the core seminar and as outlined on the hand-out sheet, the focus of the session was on an explanation of the coding grid and the derivation of the Reflective Index (see Appendix D).

In preparation for the next segment of the program, copies of Joyce and Weil's Models of Teaching (1972) and a hand-out sheet on 'Models of Teaching' excerpted from some prepublication material supplied by Joyce* were distributed to the participants.

Core Component II: Skill in Radiating Environments

Objective: To extend the teacher's skill in radiating environments to include the behavioral capacity to radiate a variety of environments and to present the same lesson in a variety of instructional forms; to radiate an environment or employ a model which will produce a specified behavior; and to radiate an environment or employ a model which will produce a specific behavior from a particular person.

Format. A basic acquaintance with the various teaching strategies was accomplished through independent study of printed material and through seminar sessions, each seminar being devoted to the processing of one strategy. Model use and extent of mastery in the classroom was left entirely to the teacher although there was provision for discussion of experiences prior to the commencement of the next seminar topic.

Teaching strategies included in the program. 'Synectics' and the 'Inquiry Training Model', both from Joyce and Weil (1972) were presented

*The hand-out sheet is available from the author of this report.

as the first two models, at the discretion of the program consultant. Taba's 'Inductive Teaching Model' and Glasser's 'Classroom Meeting Model' (Joyce & Weil, 1972) were presented as requested by all participants and 'Simulation' which was requested by only a few was thus an optional model for the other groups.* There was some independent study of other models--e.g. Behavior Modification--and the consultant supplied materials from the University Library for the interested teacher. Learning centers and contracting in the elementary school were presented to all groups, at the discretion of the consultant, and multi books and materials were made available to the teacher in connection with these strategies.

Core Component III: Skill in Flexible Modulation

Objective: To enhance the skill of the teacher to modulate flexibly to the individual needs of the students.

Format. Other than in the context of seminar discussions and with respect to individual discussions upon return of the post program taped lesson, the enhancement of this skill was the independent concern of the teacher.**

Post program taped lesson. At the end of the program the teacher was again asked to submit a tape of a lesson with which she/he felt comfortable and which was deemed to be rather reflective of her/his teaching style. Following analysis, as in the pre program lesson, the tape and coding grid were returned to the teacher and discussion centered around the question: "Do you feel that there has been any change in your teaching style since the time of the first taped lesson? If so, what do

*Samples of hand-out materials used in connection with the processing of these models are available upon request from the study consultant.

**The original plan called for the use of the 'Adaptability Index' of Hunt (1970) but as the program unfolded it was considered inadvisable to implement use of the instrument with these experienced teachers.

you feel has changed?"

Conclusion

At the close of the last session (as above) the participants were given an opportunity to articulate their thoughts with respect to the program (see Appendix E). Arrangements were made for the completion of the final research questionnaires.

CHAPTER V

PRESENTATION OF RESULTS: DESCRIPTIVE AND STATISTICAL ANALYSES

The results of the study will be presented in the order of the stated purposes, as delineated in Chapter III, with the exception of Specific Purpose 5 which is concerned with the discernment and description of group profiles with respect to residual and change characteristics. Such profiles will be sketched when appropriate as the analyses of the central variables proceed.

Before proceeding directly to the presentation of results, information with respect to protocol scoring and coding as well as blocking procedures for the purposes of analyses will be presented.

Information With Respect to the Scoring and Coding of Protocols and Blocking Procedures Used in Analyses

PC Protocols. All PC protocols were scored by Ms M. Rosser, a conjoint author of the scoring manual, and thus scoring is assumed to be reliable and commensurate with previously reported reliabilities. For purposes of comprehensive analyses, PC scores were blocked in accord with the categories so delineated by Hunt and his associates--i.e. subjects who scored 0-1.0 were assigned to CL₁; 1.2-1.4 to CL₂; 1.5-1.9 to CL₃; and 2.0 plus to CL₄.

TC Protocols. All TC protocols were scored by Ms C. Case, co-author of the scoring manual, and thus scoring is assumed to be reliable. Subjects who scored zero were included in the score vector for purposes of central analyses but were excluded for certain stated contrast purposes. For purposes of statistical analyses the discrete TC levels (0 through 6), as delineated by Fuller and Case (1972), were utilized.

RI Protocols. Two trained raters independently coded all the transcribed protocols. Reliability was computed to be .90 on percentage of reflective

teacher communications.

MJ Protocols. All MJ protocols were scored at the Center for Moral Development and Education, Harvard University, by Dr. Marvin W. Berkowitz, staff member, in accord with the latest scoring procedures, and thus the scoring is assumed to be reliable.* For purposes of statistical analyses, and because of the heterogeneity of designations within stages, numerical values were assigned to the designated points (stages) on the continuum.

Other Variables

Sex and course recency were bi-categorical assignments in this study. A recent course (RC) subject was one who was currently engaged in a University credit course or who had been so engaged within the last three years.

For purposes of correlation, teacher training entries were in years of training (including half years); for purposes of blocking, two categories were used: (1) up to and including 4 years of training, and (2) 4.5 years and over (post degree).

For purposes of correlation, teacher experience entries were in years; for purposes of blocking, three categories were used: (1) up to and including 9 years of experience, (2) 10 through 19 years, and (3) 20 years and over.

For correlational purposes, age entries were in years; for blocking purposes, four categories were used: (1) up to and including 29 years of age, (2) 30 through 39 years, (3) 40 through 49 years, and (4) 50 years and over.

Entering Characteristics of the Study Group(s)

with Respect to the Variables of Concern to the Study

The purpose of examining entering characteristics was twofold: (1) To enable the sketching of residual performance levels of 'select' teachers

* The protocols were rated by Dr. Berkowitz to be of 'poor' quality.

with respect to the variables of psychological development and teacher development (considered separately at this point) and, where possible, to compare these profiles with the norms of other populations; and (2) To compare the two study groups (T₁ and T₂) in terms of entering characteristics in order to provide context for the analyses and interpretation of results.

Description of the Program Group (T₁) on MJ

The distribution pattern of the 33 scoreable protocols with respect to designated points on the MJ continuum is shown in Table 16.

Table 16

MJ Scoring Pattern of Program Group

Stage	N	Percent of Sample
Stage 1	0	0
Stage 2	0	0
Stage 2(3)*	1	3.03
Stage 3	2	6.06
Stage 3(4)	4	12.12
Stage 3/4**	4	12.12
Stage 4(3)	14	42.42
Stage 4	8	24.24
Stage 5	0	0
Stage 6	0	0
33		

* (n) indicates the minor stage

**/ indicates a tie

It is noted that no subject in this sample scored above the Stage 4 level which, according to Kohlberg, is the modal general population level. In comparison with the distribution pattern of college students reported by Cavanagh (1976), 66% of the present sample scored in the 4(3) and 4 stage as

compared with 15.4% of the college sample. (Cavanagh also found no subjects scoring in Kohlberg's upper level Stages 4 and 5.)

Description of Study Group With Respect to CL and TC Level

The distribution of the study subjects with respect to the purported need for structure, as indicated by PC scores, is shown in Table 17.

Table 17

CL Group Distribution of Sample

	Need Much Structure (CL ₁)		Some (CL ₂)		Less (CL ₃)		Little (CL ₄)	
	(n)	%	(n)	%	(n)	%	(n)	%
Program Group (T ₁) (n=34)	(10)	29	(11)	32	(7)	21	(6)	18
Comparison Group (T ₂) (n=20)	(3)	15	(4)	20	(9)	45	(4)	20
Total Sample (n=54)	(13)	24.1	(15)	27.8	(16)	29.6	(10)	18.5

A comparison of these percentage distributions with those reported in other studies of college and university subjects (see 'Norms for Learning Style--Adult Sample', Appendix F) suggests a lower proportion of CL₃ and CL₄ subjects and a consequent higher proportion of CL₁ and CL₂ subjects in this 'select' group of experienced teachers. In fact, the norms for this group are more comparable with the 'Alcoholics in Treatment' group!

With respect to treatment group distribution, it is noted that 61% of the T₁ group are classified as CL₁₋₂ as compared with 35% of the T₂ group, leaving only 39% in the upper two levels for T₁ as compared with 65% for T₂.

The comparative categorical distribution of the study groups with respect to level of teaching concern is given in Table 18. In comparison with Fuller's report of 60-64% of inservice teachers scoring at Phase II-III, 93% of this group scored at these levels, the relative proportions at each Phase level being 7%, 26%, and 67% respectively.

Table 18

TC Category Distribution of Sample

Phase Level	I		II		III			
	0	1	2	3	4	5	6	
	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %	(n) %	
T ₁ (n=34)	(3) 9	-	(4) 12	(6) 18	(11) 32	(10) 29	-	
T ₂ (n=20)	(1) 5	-	(2) 10	(2) 10	(5) 25	(9) 45	(1) 5	
Total (n=54)	(4) 7	-	(6) 11	(8) 15	(16) 30	(19) 35	(1) 2	

With respect to discrete study group TC distribution, it is noted that 42% of the T₁ group are classified as Phase III as compared with 75% of T₂ or, more selectively, at Levels 5 and 6 the incidence of T₁ subjects is 29% as compared with 50% of the T₂ subjects. Thus, as was evinced for PC performance, there is a higher proportion of high performance TC subjects in T₂ than in T₁.

The means, medians, variances and standard deviations for each study group on PC and TC pretest performance are given in Table 19.

Table 19

Means, Medians, Variances, and Standard Deviations
for Study Groups on PC and TC Pre

	Mean	Median	Variance	Standard Deviation
T ₁ PC (n=34)	1.45	1.28	.22	.46
T ₂ PC (n=20)	1.55	1.53	.13	.35
T ₁ TC (n=34)	3.70	4.02	2.16	1.47
T ₂ TC (n=20)	4.21	4.79	2.85	1.69

An examination of the PC means and medians indicates a positively skewed distribution for the T₁ group. A t-test for a difference between two independent means yielded a non-significant t value of .43 (df=52).

Although the variance and standard deviation are both slightly greater for T₁ than for T₂, a homogeneity of variance test indicated that there is no significant difference in score dispersion for the two groups.

With respect to comparative group levels on TC, it is noted that the mean of T₁ falls within Level 3 whereas the mean of T₂ is within Level 4. Again, a t-test indicated no significant difference in TC scores between the two groups (t value=1.20, df=52).

Although the variance and the standard deviation are slightly higher for T₂, a homogeneity of variance test again indicated no significant difference in score dispersion for the two groups.

Program Group (T₁) Performance on Pre RI

The residual mean percentage number of teacher communications above the factual level was 22.94% for this 'select' group of teachers.

Characteristics of Study Groups on Selected Study Variables

Teacher experience, teacher training, and age. A summary of the relative composition and descriptive statistics for each study group with respect to teacher experience, teacher training, and age is given in Table 20.

There would seem to be little variation between the two groups with respect to teacher experience; half of each group has experience up to and including nine years.

With respect to teacher training, the T₁ group contains a much higher proportion of teachers with 4 years and under than does T₂, the ratio of teachers in each training category being more equal.

With respect to age, it is noted that T₁ contains a higher proportion of older subjects than does T₂--the proportion of people over 50 years being more than twice that of T₂. The median age for T₂ is 6 years less than T₁.

Table 20

Entering Characteristics for Study Groups:
Teacher Experience, Teacher Training, and Age

A. <u>Teacher Experience</u>										
	-9 years (n)	%	10-19 (n)	%	20+ (n)	%	Mean	Median	Variance	Standard Deviation
T1	(17)	50	(9)	26.5	(8)	23.5	12.89	9.5	66.05	8.13
T2	(10)	50	(6)	30	(4)	20	11.70	9.5	51.81	7.27
	(27)		(15)		(12)					
B. <u>Teacher Training</u>										
	-4 years (n)	%	4+ years (n)	%						
T1	(24)	70.6	(10)	29.4			4.17	4.08	.83	.91
T2	(11)	55	(9)	45			4.50	4.40	.85	.92
	(35)		(19)							
C. <u>Age</u>										
	-29 years (n)	%	30-39 (n)	%	40-49 (n)	%	50+ (n)	%		
T1	(8)	23.5	(8)	23.5	(7)	20.6	(11)	32.4	41.06	12.0
T2	(6)	30	(6)	30	(5)	25	(3)	15	38.30	10.19
	(14)		(14)		(12)		(14)			

Homogeneity of variance tests indicate no significant difference on any of the three variables.

Sex and recent course work. A summary description of the two groups with respect to sex and recent/no recent course work is given in Table 21.

Table 21

Entering Characteristics for Study Groups:

Sex and Recent Course Work

	Sex				Course Work			
	Male (n)	%	Female (n)	%	RC (n)	%	NRC (n)	%
T ₁ (n=34)	(8)	23.5	(26)	76.5	(14)	41.2	(20)	58.8
T ₂ (n=20)	(5)	25	(15)	75	(7)	35	(13)	65
	(13)		(41)		(21)		(33)	

With respect to sex, approximately three-fourths of both groups are females. With respect to recent courses, a slightly higher proportion of the Program Group (T₁) appear to be so engaged.

Description of Program Group by Area

In view of the fact that this group was drawn from four distinct areas and that there was observed differential supportiveness on the part of the area administration, consideration of the contributing characteristics of the area participants would seem to be an important factor in the consideration of Program Group performance. It should be noted at this point that one subject withdrew from Area A (reason: pregnancy) and two subjects withdrew from Area B (reasons: too busy).

Characteristics of T₁ area participants: CL, TC, and RI. Table 22 is a summary of the relative contributions of the four areas with respect to CL, TC, and RI pre program performance.

With respect to CL, it is noted that Areas B and D have no represen-

tation in CL₄ with Area C contributing four of the six subjects. Also noted is that eight of the nine participating Area D subjects fall within CL₁-2. The PC mean for Area D is also the lowest mean.

Table 22

Entering Characteristics of T₁ Group by Area: CL, TC, and RI

A. Entering CL										Mean	
N	%*	CL1		CL2		CL3		CL4			
		(n)	%	(n)	%	(n)	%	(n)	%		
Area A	9	26.5	(3)	30	(2)	18.3	(2)	28.5	(2)	33.3	1.5
Area B	6	17.6	(2)	20	(1)	9	(3)	42.9	(0)	0	1.4
Area C	10	29.4	(2)	20	(3)	27.3	(1)	14.3	(4)	66.7	1.5
Area D	9	26.5	(3)	30	(5)	45.5	(1)	14.3	(0)	0	1.2
<u>34</u>			<u>(10)</u>		<u>(11)</u>		<u>(7)</u>		<u>(6)</u>		
<hr/>											
B. Entering TC										Mean	
		Phase I		Phase II		Phase III					
		(n)	%	(n)	%	(n)	%				
Area A			(0)	0		(5)	50		(4)	19	3.7
Area B			(0)	0		(2)	20		(4)	19	4.1
Area C			(1)	33.3		(2)	20		(7)	33.3	3.9
Area D			(2)	66.7		(1)	10		(6)	28.6	3.3
			<u>(3)</u>		<u>(10)</u>		<u>(21)</u>				
<hr/>											
C. Entering RI										Mean	
Area A											24.8
Area B											21.0
Area C											23.5
Area D											21.8

*Proportion of Program Group

With respect to entering TC, it is noted that Area C is the highest contributor to Phase III and Area A has the highest mean. Again, Area D ranks low with a contribution of two of the three Phase I subjects and with the lowest mean score.

With respect to entering RI, it is noted that Areas B and D evince the lowest means, Area A the highest.

Characteristics of T₁ area participants: Selected study variables.

Table 23 represents a summary of the comprising area groups with respect to teacher experience, teacher training, and age.

Table 23

Entering Characteristics of T₁ Group by Area:
Teacher Experience, Teacher Training, and Age

		A. <u>Teacher Experience</u>						Mean
N		-9 years		10-19		20+		
		(n)	%	(n)	%	(n)	%	
Area A	9	(6)	35.3	(2)	22.2	(1)	12.5	9.4
Area B	6	(5)	29.4	(0)	0	(1)	12.5	9.8
Area C	10	(3)	17.6	(4)	44.4	(3)	37.5	15.9
Area D	9	(3)	17.6	(3)	33.3	(3)	37.5	15.0
		(17)		(9)		(8)		
<hr/>								
		B. <u>Teacher Training</u>						
		-4 years		4+ years				
		(n)	%	(n)	%			
Area A		(5)	20.8	(4)	40			4.4
Area B		(4)	16.7	(2)	20			4.2
Area C		(7)	29.2	(3)	30			4.5
Area D		(8)	33.3	(1)	10			3.5
		(24)		(10)				
<hr/>								
		C. <u>Age</u>						
		-29 years		30-39		40-49		50+
		(n)	%	(n)	%	(n)	%	(n) %
Area A		(4)	50	(2)	25	(0)	0	(3) 27.3
Area B		(1)	12.5	(3)	37.5	(2)	28.6	(0) 0
Area C		(1)	12.5	(1)	12.5	(5)	71.4	(3) 27.3
Area D		(2)	25	(2)	25	(0)	0	(5) 45.4
		(8)		(8)		(7)		(11)

With respect to teacher experience, it is noted that the majority of Area B subjects have up to and including 9 years of experience (5 out of 6 subjects); out of Area A's 9 subjects, 6 have relatively little experience also.

With respect to teacher training, 8 of Area D's 9 subjects have training up to and including 4 years and it is noted that Area A contributes 40% of the advanced training subjects in the program group (T₁).

A pattern which parallels that of teacher experience for Areas A and B is noted with respect to age; Area A contributes 50% of the young age group, Area B is not represented in the oldest age group. Area D tends to have a bimodal distribution with no representation in the 40-49 age group.

With respect to sex distribution and recency of course work by area, the pattern is shown in Table 24.

Table 24

Entering Characteristics of T₁ Group by Area:

Sex and Recent Course Work

	Sex				Course Work			
	Male		Female		RC		NRC	
	(n)	%	(n)	%	(n)	%	(n)	%
Area A	(2)	25	(7)	26.9	(3)	21.4	(6)	30
Area B	(2)	25	(4)	15.4	(4)	28.6	(2)	10
Area C	(3)	37.5	(7)	26.9	(3)	21.4	(7)	35
Area D	(1)	12.5	(8)	30.8	(4)	28.6	(5)	25
	(8)		(26)		(14)		(20)	

From Table 24 it is noted that 8 out of the 9 Area D participants are females; Area B contributed the smallest proportion of NRC subjects.

The foregoing description of sample characteristics will be utilized in the consideration and interpretation of study results to which attention is now addressed.

Results in Relation to Study Purposes and Hypotheses

Study Purpose 1: To investigate the residing relation between scores obtained by subjects on the PCM (as an index of Hunt's CL) and corresponding scores obtained on the MJI (as an index of Kohlberg's moral judgment level).

The investigation in this respect was directed by the following hypothesis:

Hypothesis 1. There exists a significant positive relation between individual scores on the PCM and scores on the MJI.

As noted in the immediately preceding section, no subject scored above the pure stage 4 level on the MJ scale, therefore MJ scores that are considered statistically to be high scores are in fact medium MJ scores.

A Pearson r between MJ scores and PC pre scores yielded a significant positive correlation of .421 ($p<.05$).

A one-way Analysis of Variance performed on the MJ scores of the four CL groups indicated a tendency toward CL group differences ($p=.12$), as summarized in Table 25.

Table 25

Summary of One-way Analysis of Variance: CL Groups on MJ Scores

Source	S.S.	M.S.	D.F.	F	p
CL Groups	10.5659	3.5220	3	2.1231	.12
Error	44.7895	1.6589	27		

A Bartlet-Box Test of Homogeneity of Group Variances indicated a significant difference in group variances ($p=.05$). These differences are reflected in the scatterplot, Figure 17, in which the frequency of MJ scores by CL group is shown.

From Figure 17 it is noted that high CL subjects also scored at the

upper end of MJ sample score range but that low CL scorers ranged across the MJ score range. This observation is in accord with the finding of Cavanaugh (1976).

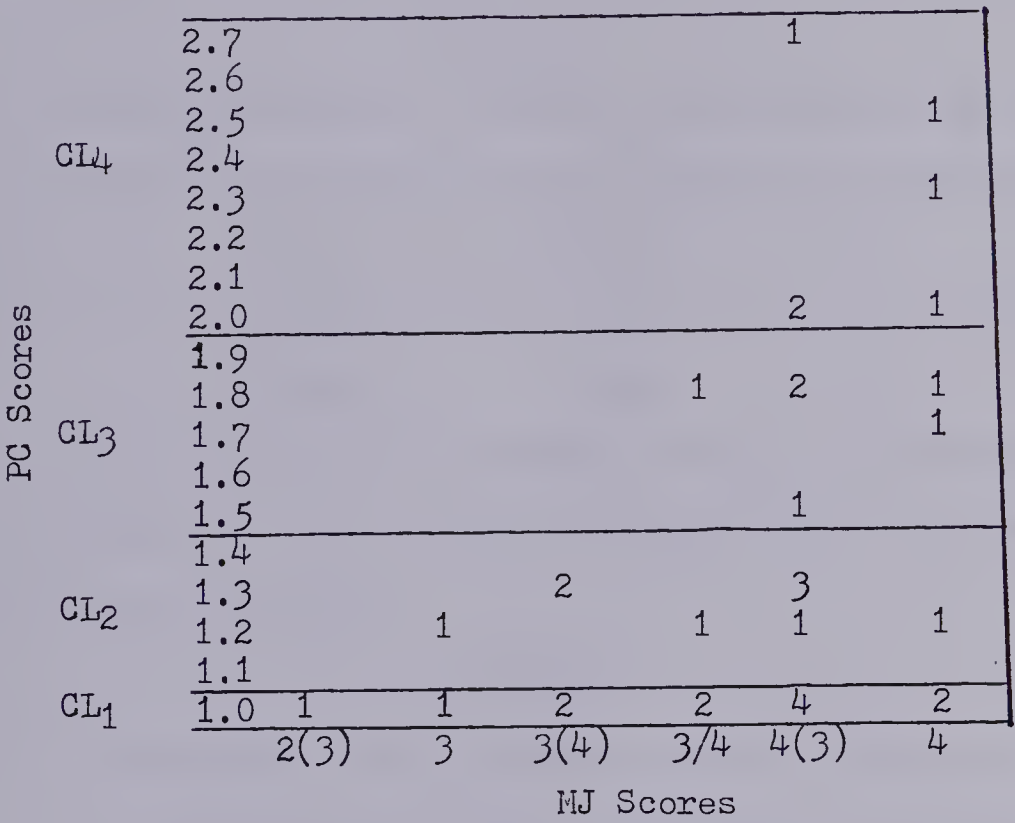


Figure 17. Scattergram of MJ scores by CL groups.

Thus, with qualifications, there is some support for the posited relation between MJ and CL, such a relation being most consistent at the upper score ranges.

Study Purpose 2: (a) To investigate the residing relation between scores obtained on the PCM, as a measure of psychological maturity, and scores obtained on the TCS, as a measure of teacher maturity; and (b) To investigate the relation of the scores obtained on these two developmental indices to scores obtained on the behavioral index of 'teaching style', the RI.

The residing correlation between TC and PC scores was found to be small and not significant for T₁ (r=.112), somewhat larger but still not significant for T₂ (r=.431), and not significant for the combined sample (r=.223). (See 'Correlation Matrices for all Variables, Table 73, Appendix F.)

However, a one-way Analysis of Variance on the TC scores of the four CL groups indicated a trend toward CL group differences ($p=.07$), as summarized in Table 26.

Table 26

Summary of One-way Analysis of Variance: CL Groups on TC Pre Scores

Source	S.S	M.S.	D.F.	F	p
CL Groups	15.6494	5.22	3	2.54	.07
Error	102.7051	2.05	50		

The descriptive statistics with respect to the TC scores of the CL groups are given in Table 27.

Table 27

Treatment Group Distributions, Means, Variances, and
Standard Deviations: CL Groups on TC Scores

	TC Distribution						Mean	Variance	S.D.
	Phases I, II			Phase III					
	T ₁ (n)	T ₂ (n)	%*	T ₁ (n)	T ₂ (n)	%			
CL ₁ (n=13)	(5)	(2)	53.8	(5)	(1)	46.2	2.95	3.6110	1.9003
CL ₂ (n=15)	(3)	(1)	26.7	(8)	(3)	73.3	4.06	2.0011	1.4146
CL ₃ (n=16)	(2)	(2)	25	(5)	(7)	75	4.34	1.1440	1.0696
CL ₄ (n=10)	(3)	(0)	30	(3)	(4)	70	4.12	1.5773	1.2559

*% of CL group N

From Table 27 it is noted that there is an increasing proportion of Phase III concerns with increasing CL level from CL₁ through CL₃, the pattern being broken by CL₄. A Scheffé Multiple Comparison test indicated group differences between CL₁ and CL₃ at $p=.09$. A homogeneity of variance

test indicated no significant differences in group variances.

An inspection of the visual representation of TC scores by CL groups according to treatment group indicates an interesting performance difference (not of statistical significance) between T1 CL4 and T2 CL4 (see Figure 18).

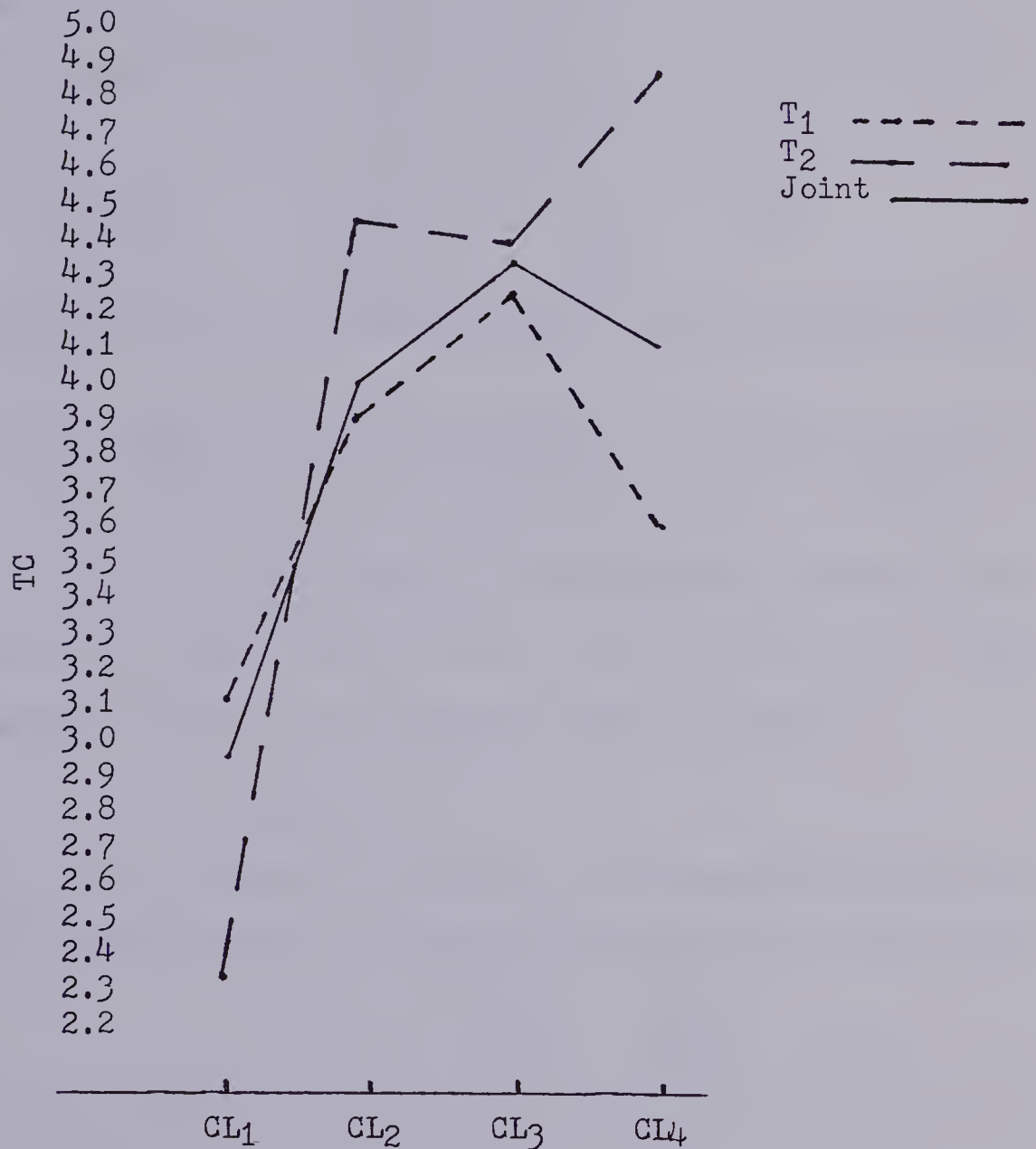


Figure 18. TC scores by CL group for each study group.

Although there seems to be somewhat of a discernible pattern when TC performance is related to CL groups, there also appears to be some interesting variability evinced.

With respect to the residing relation of RI to PC and TC performance, as indicated in the 'Correlation Matrices for all Variables' (Appendix F),

the correlations were small and not significant ($\underline{r}=.08$ and $\underline{r}=.276$ for pre PC and TC respectively). A one-way Analysis of Variance on the RI scores of the four T₁ CL groups indicated no significant group differences, as summarized in Table 28.

Table 28

Summary of One-way Analysis of Variance: T₁ Groups on RI Pre Scores*

Source	S.S.	M.S.	D.F.	F	p
CL Groups	328.9844	109.66	3	.53	
Error	5970.8945	205.89	29		

*Pre scores of 33 Ss

Examining the patterning of the three variables in another way, this time considering only the high or 'top' scorers on the PCM (i.e. CL₄'s) and on the TCS (Levels 5, 6), three groups are identifiable: High PC only, High TC only, and Jointly High PC and TC. The distribution of these groups for T₁ and T₂ together with the T₁ RI scores is given in Table 29.

Table 29

Pre Distribution of 'Top' Scorers for T₁ and T₂ and Respective RI's for T₁

	T ₁				N	% of Total N (N=54)	% of Top N (N=24)	T ₁ RI
High PC	(4)	11.8	(1)	5	5	9.3	20.8	30.3
High TC	(8)	23.5	(6)	30	14	25.9	58.3	27.4
Jointly High	(2)	5.9	(3)	15	5	9.3	20.8	18
	(14)		(10)		24			

The High PC Group ranged on TC scores from 2.0 through 4.0; the High TC Group ranged on PC scores from 1.0 through 1.8. Thus, although there is an overlap for a certain group of subjects, high PC scores do not seem to

assure high TC scores nor vice-versa. It is interesting that the Jointly High group had the lowest mean RI, the High PC group the highest RI.

Study Purpose 3: (a) To investigate the relative efficacy of a 'Teacher Enrichment Experience' program treatment, designed to enhance flexibility in teaching, and a simple 'Hawthorne-expectancy' treatment upon inducement of progression in Conceptual Level (as indexed by PC scores) and progression in level of teacher development (as indexed by TC scores) and the effect of Conceptual Group level (CL group membership) upon both PC and TC progression; and (b) To investigate with the Program group (T_1) changes in style of teaching, as indexed by RI (Reflective Index), over the pre-post time period and the relation of CL group membership to such performance.

PC performance. As shown in the 'Correlation Matrices for all Variables' (Appendix F), the correlation between pre and post PC for T_1 was $r=.525$, significant at $p=.001$; for T_2 , pre and post PC correlation was $r=.325$ and was not significant.

A two-way Analysis of Variance involving pre-post PC scores (repeated measures design) by treatment group, the results of which are summarized in Table 30, indicated a significant interactive effect of treatment group and pre-post ($p=.03$); a significant treatment group effect ($p=.026$); and a most significant pre-post effect ($p=.000006$).

The mean scores, variances, and standard deviations for each treatment group are presented in Table 31 and Figure 19 is a visual representation of these results.

It is apparent that T_2 (the Comparison group--the Hawthorne-expectancy treatment) did better than T_1 (the Program group--the Teacher Enrichment Experience treatment) on overall PC performance.

Table 30

Summary of Two-way Analysis of Variance: Treatment Group by PC Pre-Post

Source	S.S	M.S.	D.F.	F.	p
Between subjects					
Treatment groups	1.305	1.305	1	5.247	.026
Error	12.935	.249	52		
Within subjects					
Pre-post	2.271	2.271	1	25.525	.000006
Treatment group x Pre-post	.424	.424	1	4.763	.03
Error	4.627	.089	52		

Table 31

Means, Medians, Variances, and Standard Deviations
for Treatment Groups on PC Pre-Post

	Mean		Median		Variance		Standard Deviation	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
T ₁	1.45	1.62	1.28	1.59	.22	.18	.46	.42
T ₂	1.55	1.98	1.53	1.99	.13	.09	.35	.30

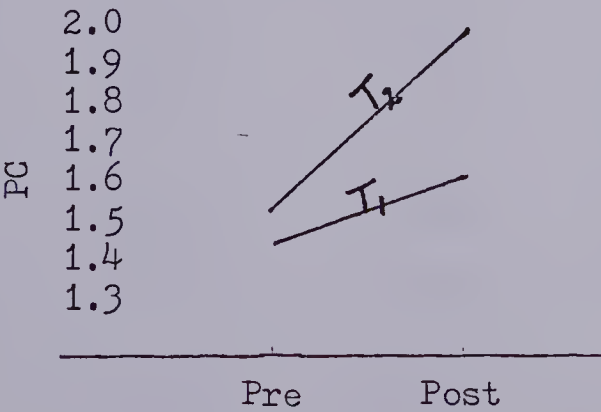


Figure 19. PC pre-post performance by treatment groups.

PC performance in relation to CL group. The data were analyzed in several ways for the purposes of examining this relationship.

Firstly, analyzing Pre-Post scores (repeated measures) in the context of each treatment separately, two-way Analyses of Variance indicated that for T₁ there was a very significant CL group-Pre-Post interaction ($p=.006$) along with most significant CL group effects ($p=.0000002$)--which might well have been expected in view of the CL blocking technique. T₁ Pre-Post effects were not significant. For T₂ the analysis indicated that in addition to the CL group-Pre-Post interaction ($p=.03$) and CL group effects ($p=.00006$) there was a significant Pre-Post effect. These analyses are summarized in Table 32.

Table 32

Summary of Two-way Analyses of Variance:

CL Groups on PC Pre-Post for Each Treatment Group Separately

Source	S.S.	M.S.	D.F.	F	p
<u>T₁</u>					
Between subjects					
CL Groups	8.087	2.696	3	28.891	.0000002
Error	2.799	.093	30		
Within subjects					
Pre-post	.209	.209	1	2.963	.095
CL group x Pre-post	1.066	.355	3	5.047	.00598
Error	2.112	.070	30		
<u>T₂</u>					
Between subjects					
CL Groups	2.332	.777	3	15.338	.000058
Error	.811	.051	16		
Within subjects					
Pre-post	1.878	1.878	1	33.728	.0000275
CL group x Pre-post	.628	.209	3	3.763	.032
Error	.891	.056	16		

The relative performance of the CL groups for each treatment is shown in Figure 20.

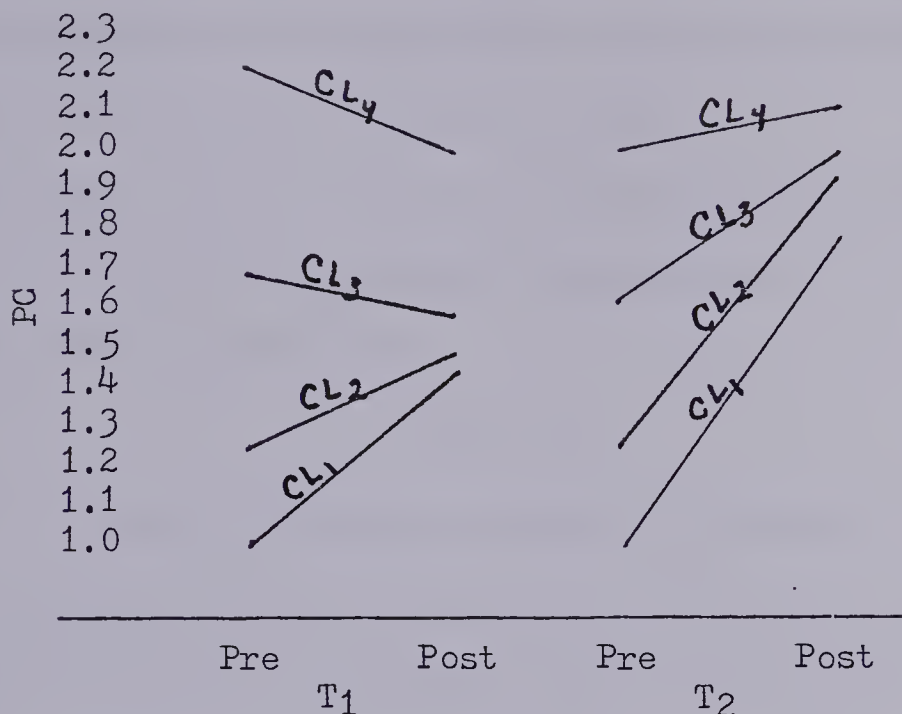


Figure 20. Comparative PC performance of CL groups for each treatment.

Noted is the performance regression for T1 CL3 and CL4. It is interesting to observe that when the 'developmental' score (the subject's higher score) is substituted for the regressed score, there is no difference for T2 (performance scores = developmental scores) and on a two-way Analysis of Variance involving treatment group on PC Pre-Post, the only significant effect remaining is that of Pre-Post (see Summary of Two-way Analysis of Variance: Treatment Group by PC Pre-adjusted Post, Table 74, Appendix F). As it stands, T2 CL groups all did better than T1 CL groups.

Approaching the problem from the perspective of 'change' scores, a two-way Analysis of Variance involving Treatment group by CL group on PC change scores indicated significant main effects of Treatment group ($p = .002$) and of CL group ($p = .0005$). These results are summarized in Table 33 and the visual pattern of change score performance is shown in Figure 21.

Within the context of each treatment analyzed separately, one-way Analyses of Variance on change scores by CL group also indicated significant

CL group effects for both treatment groups (T_1 $p=.006$, T_2 $p=.045$). These analyses are summarized in Table 34. Scheffé Multiple Comparison tests indicated significant differences between CL1 group and CL3 group ($p=.04$) and between CL1 and CL4 ($p=.04$) for T_1 only.

Noted again is the superiority of T_2 for all CL groups. Also noted is the pattern of diminishing returns with increasing CL, the pattern being more marked for T_1 than for T_2 .

Table 33
Summary of Two-way Analysis of Variance:
Treatment Groups by CL Groups on PC Change Scores

Source	S.S.	M.S.	D.F.	F	p
Treatment groups	1.40809	1.40809	1	10.7874	.0019
CL groups	2.80376	.93459	3	7.1599	.0005
Treatment group x CL group	.090398	.03013	3	.2309	
Errors	6.00443	.13053	46		

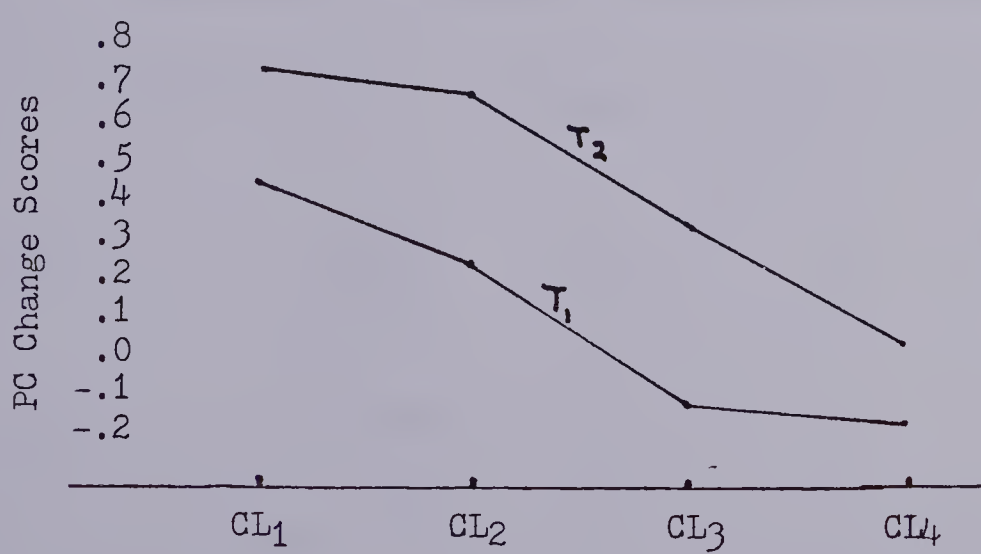


Figure 21. CL groups by treatment on PC change scores.

Table 34

Summary of One-way Analyses of Variance:

CL Groups on PC Change Scores for Each Treatment Group Separately

Source	S.S.	M.S.	D.F.	F	p
T ₁					
CL groups	2.1277971	.71	3	5.04	.006
Error	4.222778	.14	30		
T ₂					
CL groups	1.1203327	.37	3	3.35	.045
Error	1.7816620	.11	16		

Finally, one-way Analyses of Variance on Post scores for each treatment separately indicated CL group differences for T₁ but not T₂ (see Table 35). Scheffé tests indicated that T₁ CL₁ differed from T₁ CL₄ ($p=.03$) and T₁ CL₂ differed from T₁ CL₄ ($p=.05$).

Table 35

Summary of One-way Analyses of Variance:

CL Groups on Post PC Scores for Each Treatment Group Separately

Source	S.S.	M.S.	D.F.	F	p
T ₁					
CL groups	1.6607361	.55	3	3.85	.019
Error	4.3086090	.14	30		
T ₂					
CL groups	.23582458	.08	3	.83	
Error	1.5216522	.10	16		

Thus it appears that T₂ was better for all CL groups; the performance pattern is one of diminishing returns with higher CL and markedly so for T₁.

TC performance. As shown in the 'Correlation Matrix for all Variables' (Appendix F), the correlation between pre and post TC for T₁ was small and not significant ($r=.255$); for T₂ pre and post correlation was $r=.665$ and was significant ($p=.001$).

A two-way Analysis of Variance involving Pre-Post TC scores (repeated measures) by treatment group, the results of which are summarized in Table 36, indicated no significant effects of treatment group or Pre-Post.

The mean scores, medians, variances, and standard deviations for each treatment group are presented in Table 37 and Figure 22 is a visual representation of relative performance. It is noted that whereas the median was raised at post for T₁ it was lowered for T₂. Homogeneity of variance tests indicated (a) a difference in variability between T₁ and T₂ Post scores at $p=.10$ on a two-tailed test ($F=2.66$, $df=33/19$) and (b) for T₁ a Pre-Post difference at $p=.10$ ($t=1.742$, $df=32$), which represents an increase in variance, and for T₂ a Pre-Post difference at $p=.001$ ($t=4.931$, $df=18$), which represents a decrease in variance.

Table 36

Summary of Two-way Analysis of Variance: Treatment Group by TC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	3.378	3.378	1	1.111	
Error	158.052	3.039	52		
Within subjects					
Pre-post	.780	.780	1	.538	
Treatment group x Pre-post	.464	.464	1	.320	
Error	75.380	1.450	52		

Table 37
Means, Medians, Variances, and Standard Deviations
for Treatment Groups on TC Pre-Post

	Mean		Median		Variance		Standard Deviation	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
T ₁	3.70	4.02	4.02	4.79	2.16	2.85	1.47	1.69
T ₂	4.21	4.25	4.95	4.70	2.10	1.07	1.45	1.03

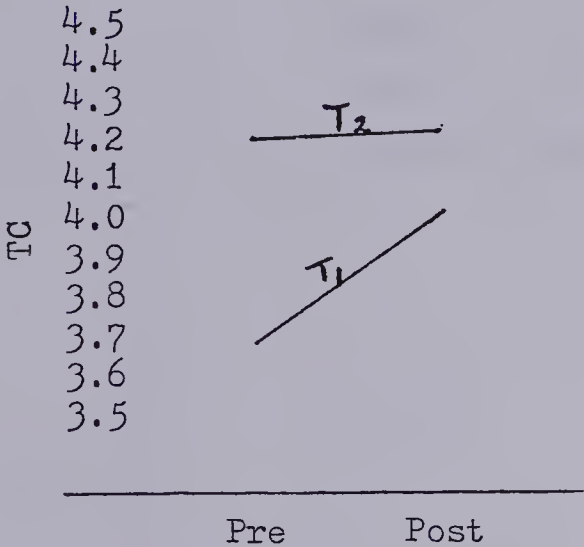


Figure 22. TC pre-post performance by treatment groups.

Figure 22 shows that T1 did do better although not statistically so.

It is interesting to note that when the TC scores are adjusted to exclude all 'zero' scorers, the picture changes dramatically. A two-way Analysis of Variance involving non-zero Pre-Post TC scores by treatment group, the results of which are summarized in Table 38, indicated a significant Treatment group by Pre-Post interaction ($p=.04$), the form of which is portrayed in Figure 23.

The elimination of zero subjects appears to have minimally affected T2 whereas T1 was quite markedly affected.

Table 38

Summary of Two-way Analysis of Variance:
Treatment Group by Non-zero TC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.181	.181	1	.127	
Error	64.103	1.425	45		
Within					
Pre-post	1.524	1.524	1	2.897	
Treatment group x Pre-post	2.356	2.356	1	4.477	.0399
Error	23.683	.526	45		

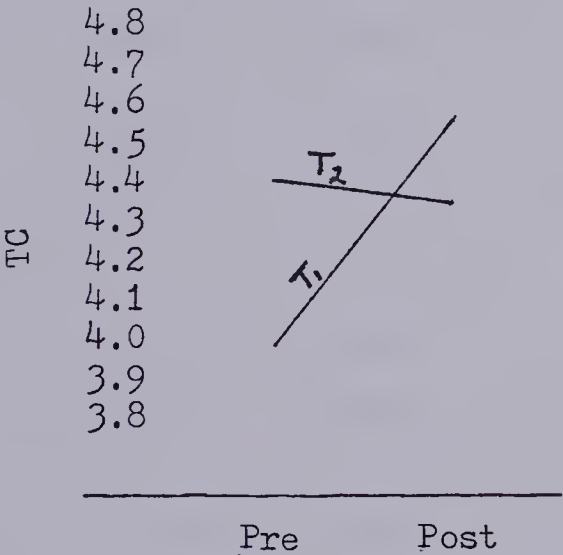


Figure 23. Non-zero TC pre-post performance by treatment groups.

TC performance in relation to PC scores and CL group. As with the residing correlation pattern, the post PC and TC correlations were very small ($\underline{r}=.015$ for T₁; $\underline{r}=.060$ for T₂) indicating no consistent pattern between the two post variables. Interesting though, is that for T₁, TC post correlated significantly with PC pre ($\underline{r}=.386$, $\underline{p}=.05$); for T₂ the pattern was $\underline{r}=.354$ which failed to reach significance.

When TC Pre-Post performance by CL group was examined in the context of each treatment separately, two-way Analyses of Variance indicated significant CL group effects for T2 ($p=.03$) and group effects approaching significance for T1 ($p=.0757$). These results are summarized in Table 39.

Table 39

Summary of Two-way Analyses of Variance:

CL Groups on TC Pre-Post for Each Treatment Group Separately

Source	S.S.	M.S.	D.F.	F	p
<u>T1</u>					
Between subjects					
CL groups	21.205	7.068	3	2.533	.0757
Error	83.719	2.791	30		
Within subjects					
Pre-post	2.979	2.979	1	1.505	
CL group x Pre-post	4.387	1.462	3	.739	
Error	59.396	1.980	30		
<u>T2</u>					
Between subjects					
CL groups	24.253	8.084	3	3.994	.0267
Error	32.385	2.024	16		
Within subjects					
Pre-post	.032	.032	1	.046	
CL group x Pre-post	.775	.258	3	.372	
Error	11.118	.695	16		

A three-way Analysis of Variance (Crossed design) which included treatment group by CL group on TC Pre-Post scores, the results of which are summarized in Table 40, indicated significant main effects of CL group membership.

TC means are summarized by group in the presentation of Table 41 and represented visually in Figure 24.

Table 40

Summary of Three-way Analysis of Variance:

Treatment Groups by CL Groups on TC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.249302	.249302	1	.09877	
CL groups	38.7305	12.9102	3	5.11498	.01
Treatment group x CL group	3.82973	1.27658	3	.50578	
Error	116.104	2.524	46		
Within subjects					
Pre-post	1.35239	1.35239	1	.882235	
Treatment group x Pre-post	.754797	.754797	1	.492394	
CL group x Pre-post	.732827	.244276	3	.159354	
Treatment group x CL group x Pre-post	2.97433	.991444	3	.6467712	
Error	70.514	1.532913	46		

Table 41

Pre and Post TC Means by CL Groups for Study Groups

	(n)	T1 Pre	Post	(n)	T2 Pre	Post	(n)	Joint Pre	Post
CL ₁	(10)	3.14	2.90	(3)	2.33	2.87	(13)	2.95	2.93
CL ₂	(11)	3.92	3.96	(4)	4.45	4.40	(15)	4.06	4.08
CL ₃	(7)	4.24	5.01	(9)	4.42	4.49	(16)	4.33	4.72
CL ₄	(6)	3.62	4.72	(4)	4.88	4.58	(10)	4.12	4.66

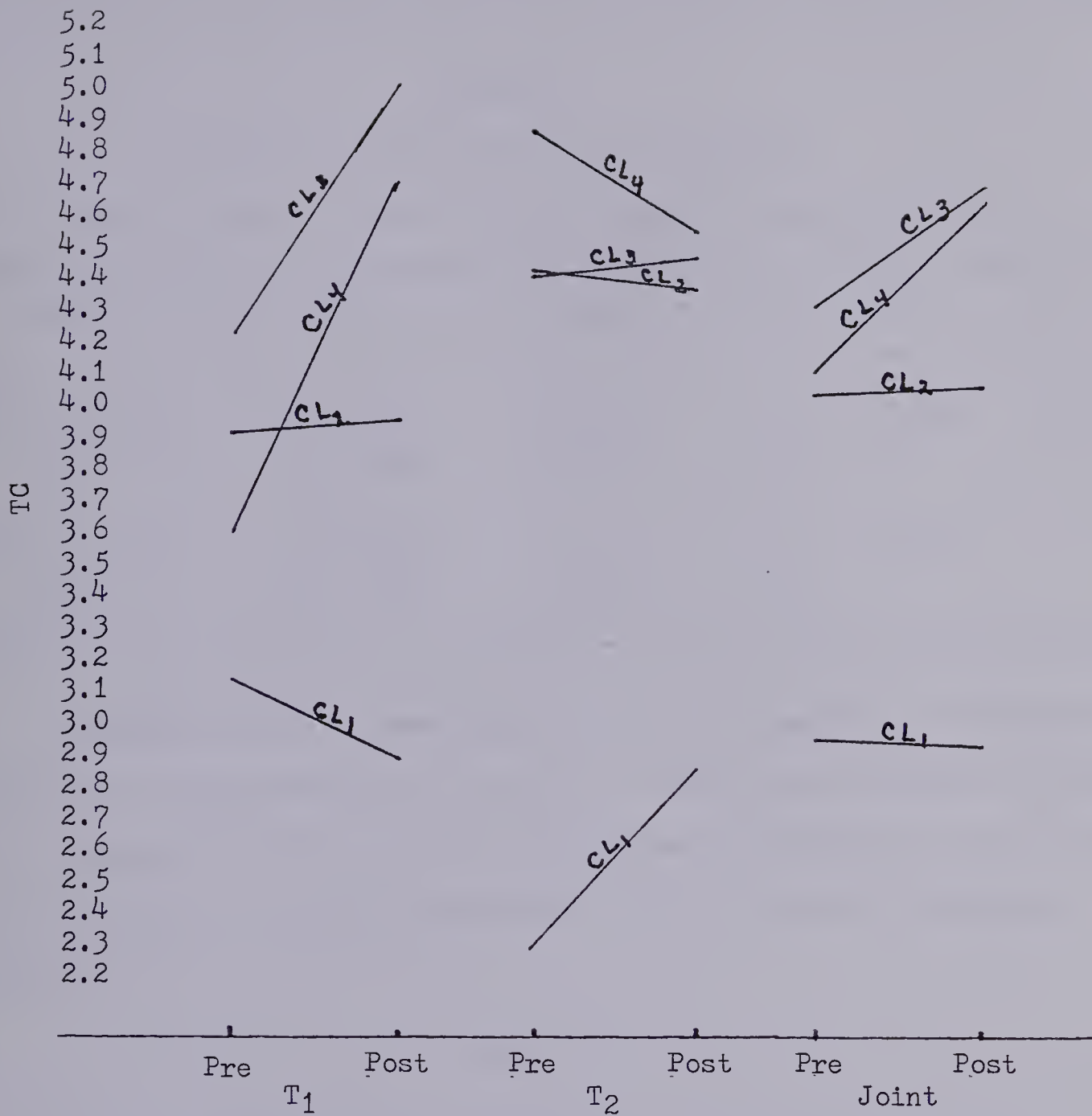


Figure 24. Comparative TC performance of CL groups for study groups.

The pattern of differential performance displayed in Figure 24 is intriguing. Firstly, the CL₁ groups are consistently low TC performers. Secondly, the CL₃ and CL₄ groups, who evinced regressed means on the post PC, increased quite noticeably for T₁ but appeared not to perform well under T₂.

One-way Analyses of Variance on Post TC scores by CL groups for each treatment separately, the results of which are summarized in Table 42, indicated a 'near-miss' for CL group effects for T₁ ($p=.056$); for T₂, $p=.10$.

(A Scheffé test indicated differences between T1 CL1 and T1 CL3 at $p=.095$.)

Table 42

Summary of One-way Analyses of Variance:

CL Groups on Post TC Scores for Each Treatment Group Separately

Source		S.S.	M.S	D.F.	F	p
<u>T1</u>	CL groups	2131.5234	710.51	3	2.82	.056
	Error	7560.7422	252.02	30		
<u>T2</u>	CL groups	676.64453	225.55	3	2.48	
	Error	1456.3086	91.02	16		

Homogeneity of variance tests indicated no significant differences on the TC Post score variances for the T2 CL groups but significant differences (chi square = 16.0724, $p=.0011$) were evinced in variability for T1 CL groups. The variances and standard deviations for the groups are presented in Table 43.

Table 43

TC Post CL Group Variances and Standard Deviations for Treatment Groups

T1				T2		
	(n)	Variance	S.D.	(n)	Variance	S.D.
CL1	(10)	51.9389	2.2790	(3)	22.5334	2.2790
CL2	(11)	25.4456	1.5952	(4)	5.8000	.7616
CL3	(7)	4.0145	.6336	(9)	9.6863	.9842
CL4	(6)	2.0170	.4491	(4)	1.8917	.4349

For T1, the amount of variance is seen to decrease as CL increases. Interesting is that when TC scores are adjusted to exclude zero

subjects (pre and post), two-way Analyses of Variance on each treatment separately (see Table 75, Appendix F) indicated a significant Pre-Post effect ($F=11.163$, $p=.0027$) for T_1 ; a three-way Analysis of Variance involving Treatment groups by CL groups by TC Non-zero Pre-Post indicated a significant Treatment group by Pre-Post interaction ($F=4.93386$, $p=.05$) (see Table 76, Appendix F). T_1 in this context performed better than T_2 . CL group effects were erased. An examination of the six zero T_1 subjects shows that 4 of them were CL_1 and 2 were CL_2 ; 1 zero T_2 subject was CL_1 . Such a distribution explains the Pre-Post effect for T_1 , the interactive effect (treatment x pre-post) and the moderating effect upon CL group differences.

In sum, it appears that the CL_1 group had the lowest TC mean and evinced the greatest variability. Low PC subjects in T_1 seemed somewhat prone to 'striking out' on the Post TC. There is a suggestion that T_1 CL_3 and CL_4 groups who did not perform well on Post PC did make a more favorable showing with respect to TC Post.

RI performance for T_1 (Teacher Enrichment Experience program). The correlation between pre and post RI was found to be $r=-.406$ (see 'Correlation Matrices for all Variables', Appendix F) and is significant at $p=.05$.

A one-way Analysis of Variance on RI Pre-Post (repeated measures), the results of which are summarized in Table 44, indicated a significant difference between the two sets of scores ($p=.0003$).

Table 44
Summary of One-way Analysis of Variance: RI Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Pre-Post	2600.4180	2600.4180	1	16.6801	.0003
Error	4521.0820	155.89937	29		

The pre RI mean for T_1 was 21.57, the post mean was 34.73.

RI performance in relation to PC scores, CL groups, and TC scores. In keeping with the already cited residual pattern of low and not significant correlations of RI with PC and TC, post RI correlations were also low and insignificant ($r=-.186$ between RI post and PC pre; $r=-.068$ between RI post and PC post; $r=-.040$ between RI pre and PC post; $r=.226$ between RI post and TC pre; $r=.244$ between RI post and TC post; and $r=.284$ between RI pre and TC post).

With respect to the relation of CL group membership to RI performance, a two-way Analysis of Variance indicated a possible trend toward CL group effects ($p=.09$), as shown in Table 45

Table 45

Summary of Two-way Analysis of Variance: T_1 CL Groups on RI Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
CL groups	2214.049	738.013	3	2.379	.09
Error	8066.512	310.250	26		
Within subjects					
Pre-post	1690.602	1690.602	1	11.345	.0024
CL group x Pre-post	911.457	303.819	3	2.039	
Error	3874.520	149.020			

Figure 25 is a visual representation of CL group performance on RI. The comparatively low residual RI level of CL4 and the subsequent poor performance is noted. With respect to CL4, it is to be noted at this point that the number of subjects was reduced to 4 (2 subjects did not complete post RI's), 3 of these subjects were from Area C and were in the 40-49 age group, thus focussing attention on the relation of area and

and age to study group performance. (Analyses of these variables will follow in a subsequent section of this chapter.)

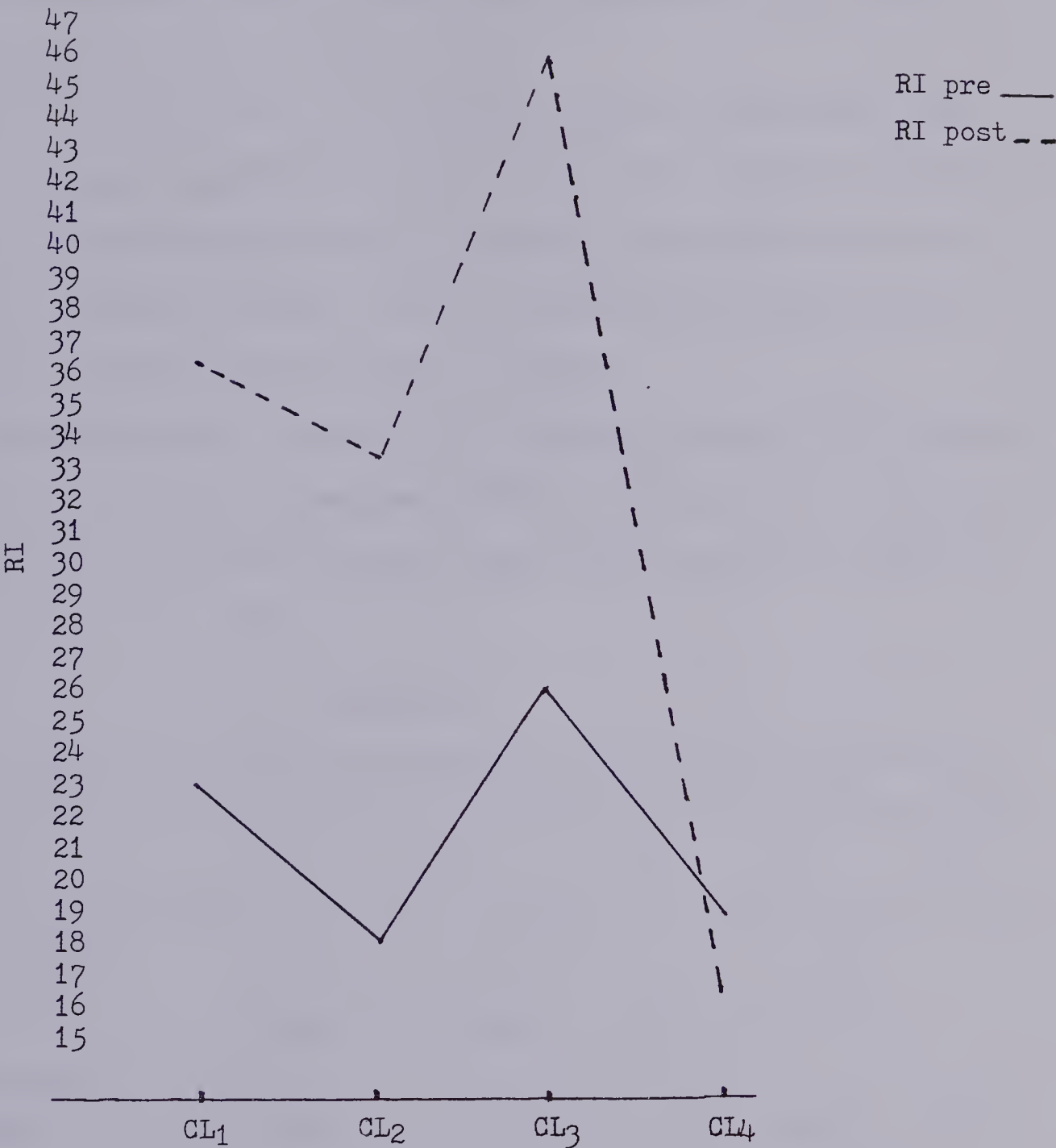


Figure 25. RI pre and post performance for T1 CL groups.

The pre and post means in relation to Figure 25 are, respectively: CL₁, 23.2 and 36.4; CL₂, 18.6 and 33.7; CL₃, 26.2 and 46.0; CL₄, 19.3 and 16.8.

In order to present a comprehensive profile of 'top' scorers, the role of selected variables will now be examined.

Study Purpose 4: To selectively investigate the relation of (a) area (geographic school jurisdiction) to PC, TC, and RI performance for the T₁ group; (b) sex, teacher experience, and teacher training to PC performance for the study groups; and (c) course recency and age to both PC and TC performance for the study groups.

Area. The contribution to CL groups by area was discussed in the section on entrance characteristics and it was noted that all areas did not contribute proportionately to these categories, thus results need to be examined with respect to area. It will be recalled that there were no significant residing effects of area on PC Pre.

A two-way Analysis of Variance involving area groups on PC Pre-Post, the results of which are summarized in Table 46 indicated no significant main effects of area but did reveal a significant interactive effect of area and Pre-Post ($p=.038$).

Table 46

Summary of Two-way Analysis of Variance: Area Groups on PC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Area groups	1.014	.338	3	1.102	
Error	9.203	.307	30		
Within subjects					
Pre-post	.359	.359	1	4.415	.04
Area group x Pre-post	.775	.258	3	3.179	.038
Error	2.437	.081	30		

The Post PC means by area are as follows: A-1.64; B-1.27; C-1.7; and D-1.7. Figure 26 is a visual representation of these results.

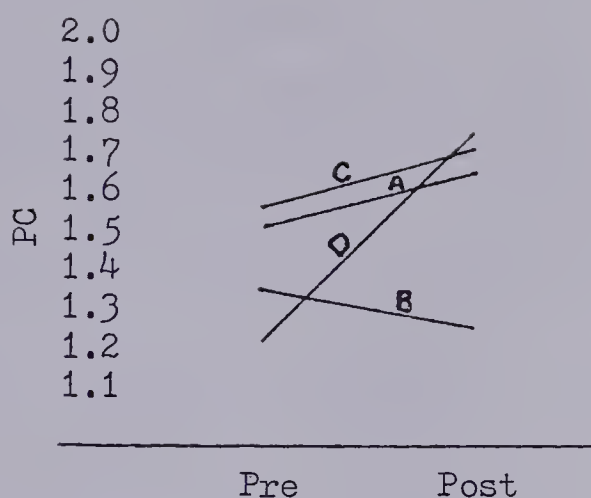


Figure 26. PC pre-post performance by area groups.

From Figure 26 it is noted that Area D started lowest and ended the highest; Area B regressed slightly in post performance. It will be recalled from Figure 21 (p. 153) that the CL₁ and CL₂ groups evinced the greatest increases in PC scores and further that eight of the nine area D subjects were CL_{1/2} subjects (see Table 22, p. 141), thus the performance of area D, as demonstrated in Figure 26, is to be expected. There would appear to be a confounding of effects. With respect to the poor performance of area B, the picture is more complex. Three of the six subjects were CL₃'s with one of three evincing a slight increase, but it is noted that only two of the remaining T₁ CL₃ group members evinced a PC Pre-Post increase (1 from A, 1 from D). However, the CL₁ and CL₂ group subjects from area B also did poorly, thus suggesting a possibly real area B poor performance.

With respect to area and TC Pre-Post, a two-way Analysis of Variance, the results of which are summarized in Table 47 indicated no significant effects of area nor of interaction. The pre-post means respectively by area are: A-3.69, 4.41; B-4.12, 3.33; C-3.87, 4.27; and D-3.26, 3.79. Although not of statistical significance, the high start of area B and the low finish is of interest.

Table 47

Summary of Two-way Analysis of Variance: Area Groups on TC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Area groups	3.457	1.152	3	.336	
Error	102.741	3.425	30		
Within subjects					
Pre-post	.779	.779	1	.396	
Area group x Pre-post	5.683	1.894	3	.963	
Error	59.032	1.968	30		

With respect to area and RI Pre-Post, a two-way Analysis of Variance indicated a significant area by Pre-Post interaction ($p=.04$), as shown in Table 48.

Table 48

Summary of Two-way Analysis of Variance: Area Groups on RI Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Area groups	537.802	179.267	3	.514	
Error	9068.488	348.788	26		
Within subjects					
Pre-post	2876.025	2876.025	1	23.358	.00005
Area group x Pre-post	1145.224	381.741	3	3.100	.04
Error	3201.352	123.129	26		

The interactive effect is shown visually in Figure 27. The Post RI means by area are: A-37.88; B-39.75; C-22.78; and D-41.67.

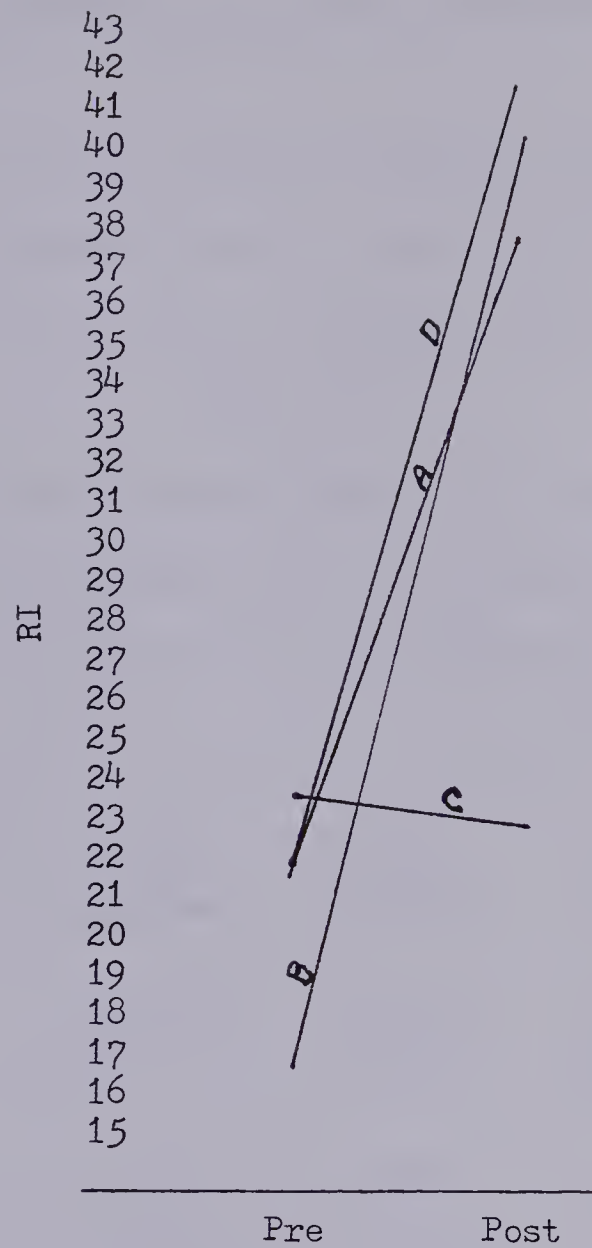


Figure 27. RI pre-post performance by area group.

It is noted that, relative to the other areas, Area C did not perform well. However, seven of the ten area C subjects were from CL₂ and CL₄ groups (see Table 22, p. 141) which were the two groups evincing relatively poor RI performance (see Figure 25, p. 164). Again there appears to be a confounding of effects.

In sum, although there is indisputably some confounding of effects, it seems reasonable to assume, on the basis of CL group performance in other areas, that there is some basis to justify the relatively poor performance of area B as evinced on PC scores and as suggested on TC scores.

Sex, teacher experience, and teacher training in relation to PC performance.

With respect to sex, a three-way (crossed design) Analysis of Variance involving treatment group, sex group, and PC Pre-Post, indicated no significant effects, main or interactive, related to sex, as shown in Table 49.

Table 49

Summary of Three-way Analysis of Variance:

Treatment Groups by Sex on PC Pre-Post

Source	S.S	M.S.	D.F.	F	p
Between subjects					
Treatment groups	1.36431	1.36431	1	5.3289	.05
Sex	.001564	.001564	1	.00610	
Treatment group x Sex	.131749	.131749	1	.514604	
Error	12.801	.25602	50		
Within subjects					
Pre-post	1.25823	1.25823	1	14.01459	.01
Treatment group x Pre-post	.364042	.364042	1	4.0548	.05
Sex x Pre-post	.111988	.111988	1	1.2474	
Treatment group x Sex x Pre-post	.0057587	.0057587	1	.06414	
Error	4.489	.08978	50		

The respective Pre-Post PC means by sex for each treatment group are:

T₁ Males-1.46, 1.49; T₁ Females-1.44, 1.66; T₂ Males-1.66, 2.00; and
T₂ Females-1.51, 1.97.

With respect to teacher experience, it is noted that all correlations between teacher training (in years) and PC for both groups were small and not significant (PC Pre: $r = -.140$; PC Post: $r = .099$) as were correlations

with TC (Pre: $\underline{r} = -.022$; Post: $\underline{r} = .023$).

A three-way Analysis of Variance involving treatment groups, teacher experience groups (up to 9 years; 10-19 years; 20 years plus), and PC Pre-Post indicated no significant effects, main or interactional, of experience group membership. The results are summarized in Table 50.

Table 50

Summary of Three-way Analysis of Variance:

Treatment Groups by Teacher Experience on PC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.939096	.939096	1	3.6131	
Experience	.434337	.217168	2	.8355	
Treatment group x Experience	.0951168	.0475584	2	.1830	
Error	12.476	.2599166	48		
Within subjects					
Pre-post	2.16246	2.16246	1	22.9843	.01
Treatment group x Pre-post	.340224	.340224	1	3.6162	
Experience x Pre-post	.0735374	.0735374	2	.3908	
Treatment group x Experience x Pre-post	.0295988	.0295988	2	.1573	
Error	4.516	.09408	48		

The respective Pre-Post means by experience group for T₁ are: up to 9 years-1.51, 1.64; 10-19 years-1.40, 1.57; and 20 years plus-1.36, 1.64. For T₂ the respective Pre-Post means are: up to 9 years-1.62, 2.07; 10-19 years-1.55, 1.88; and 20 years plus-1.35, 1.88.

Small and not significant correlations were found for T₁ between teacher training (in years) and PC pre ($\underline{r} = -.273$) and PC post ($\underline{r} = .092$) as with TC

(\underline{r} = -.160 Pre and \underline{r} = .010 Post). For T₂, teacher training correlated with \underline{r} = .467 with PC pre (\underline{p} = .05); the correlation with PC post was small and not significant (\underline{r} = .192) as were the correlations with TC pre (\underline{r} = .249) and TC post (\underline{r} = .087).

A three-way Analysis of Variance involving treatment groups, teacher training groups (up to and including 4 years training; 4.5 years plus), and PC Pre-Post indicated no significant effects, main or interactive, of teacher training group membership. The results are summarized in Table 51.

Table 51
Summary of Three-way Analysis of Variance:
Treatment Groups by Teacher Training on PC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.869529	.869529	1	3.6176	
Training	.853205	.853205	1	3.5497	
Treatment group x Training	.0073053	.00730529	1	.0304	
Within					
Pre-post	1.97862	1.97862	1	21.5021	.01
Treatment group x Pre-post	.428758	.428758	1	4.6594	.05
Training x Pre-post	.0231744	.0231744	1	.2518	
Treatment group x Training x Pre-post	.0004264	.0004264	1	.0046	
Error	4.601	.09202	50		

The respective Pre-Post means by training group for T₁ are: up to and including 4 years-1.38, 1.57; 4.5 years plus-1.62, 1.74. For T₂ such

means are: up to and including 4 years-1.46, 1.91; 4.5 years plus-1.66, 2.06.

Course recency in relation to PC and TC performance. A three-way (crossed design) Analysis of Variance involving treatment groups, course recency (RC: course work within the last three years; NRC: no recent course work), and PC Pre-Post, indicated a significant interactive effect of all three factors ($p < .05$) but no main effect of course recency. These results are summarized in Table 52.

Table 52

Summary of Three-way Analysis of Variance:

Treatment Groups by Course Recency on PC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	1.86123	1.86123	1	8.6224	.01
Course recency	.189723	.189723	1	.8789	
Treatment group x Course recency	1.47003	.147003	1	.6810	
Error	10.793	.21586	50	.2159	
Within subjects					
Pre-post	1.82683	1.82683	1	21.7428	.01
Treatment group x Pre-post	.209343	.209343	1	2.4916	
Course recency x Pre-post	.0687099	.0687099	1	.8178	
Treatment group x Course recency x Pre-post	.419600	.419600	1	4.9940	.05
Error	4.201	.08402	50		

In the context of each treatment separately, two-way Analyses of Variance indicated a significant course recency effect for T1 ($p = .01$) and

an interactive effect of course recency and Pre-Post for T₂ ($p=.04$).

Table 53 is a summary of these results.

Table 53

Summary of Two-way Analyses of Variance:

Course Recency Groups on PC Pre-Post for Each Treatment Group Separately

Source	S.S.	M.S.	D.F.	F	p
T₁					
Between subjects					
Course recency	1.908	1.908	1	7.436	.01
Error	8.211	.257	32		
Within subjects					
Pre-post	.562	.562	1	5.851	.02
Course recency x Pre-post	.105	.105	1	1.089	
Error	3.071	.096	32		
T₂					
Between subjects					
Course recency	.234	.234	1	1.633	
Error	2.582	.143	18		
Within subjects					
Pre-post	1.270	1.270	1	20.242	.00028
Course recency x Pre-post	.321	.321	1	5.120	.036
Error	1.130	.063	18		

A two-dimensional representation of these effects is presented in Figure 28. The accompanying pre and post means are: T₁ RC-1.20, 1.46; T₁ NRC-1.62, 1.73; T₂ RC-1.77, 1.96; T₂ NRC-1.42, 1.99.

From Figure 28 it is observed that the distance between Pre RC means for the treatment groups is marked. (A Tukey test indicated a significant difference at $p=.05$; C. diff.= .319, df=50,4.) The marked increase of T₂ NRC is also apparent. (A Tukey test indicated significance at $p=.05$;

C. diff.=.319, df=50,4.)

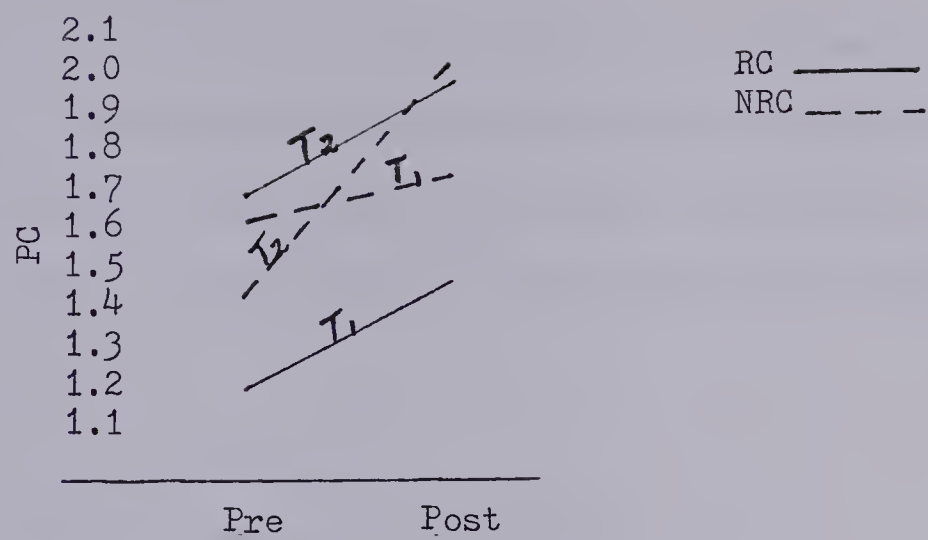


Figure 28. PC pre-post performance by course recency.

The CL group composition and area distribution of the RC and NRC groups are given in Table 54.

Table 54

RC/NRC Composition by CL Group and Area for Treatment Groups

	% of		Area							
	N	T Group	CL ₁	CL ₂	CL ₃	CL ₄	A	B	C	D
T ₁ RC	14	41	5	7	2	0	3	4	3	4
T ₁ NRC	20	59	4	5	5	6	6	2	7	5
T ₂ RC	7	35	0	1	4	2				
T ₂ NRC	13	65	4	3	4	2				

It is noted that the T₁ RC group (low Pre PC) contained an overwhelming proportion of CL₁ and CL₂ subjects (12 out of 14) whereas the T₂ RC group (high Pre PC) contained an overwhelming proportion of CL₃ and CL₄ subjects (6 out of 7). Thus, it appears there was a selection difference. Although there was a slightly higher proportion of CL₃ and CL₄ subjects in the T₁ NRC group (CL₃'s and CL₄'s being poor pre-post performers) which might

have slightly mitigated performance, it would appear that T₂ NRC's did better than their T₁ counterparts.

With respect to the relation of course recency to TC performance, a three-way Analysis of Variance involving treatment groups, course recency groups and TC Pre-Post scores, indicated a significant interaction of treatment group and course recency ($p < .01$). These results are summarized in Table 55.

Table 55

Summary of Three-way Analysis of Variance:

Treatment Groups by Course Recency on TC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	7.98192	7.98192	1	3.1984	
Course recency	2.61304	2.61304	1	1.0470	
Treatment group x Course recency	23.3833	23.3833	1	9.3696	.01
Error	124.783	2.49566	50		
Within subjects					
Pre-post	.601766	.601766	1	.4006	
Treatment group x Pre-post	.142877	.142877	1	.0951	
Course recency x Pre-post	.392811	.392811	1	.2615	
Treatment group x Course recency x Pre-post	.0524423	.0524423	1	.0349	
Error	75.115	1.5023	50		

In the context of each treatment separately, two-way Analyses of Variance indicated a significant course recency effect for T₁ ($p = .001$) but not for T₂. These results are summarized in Table 56.

Table 56

Summary of Two-way Analyses of Variance:

Course Recency Groups on TC Pre-Post for Each Treatment Group Separately

Source	S.S.	M.S.	D.F.	F	p
<u>T₁</u>					
Between subjects					
Course recency	29.244	29.244	1	12.106	.00147
Error	77.300	2.416	32		
Within subjects					
Pre-post	1.382	1.382	1	.697	
Course recency x Pre-post	.259	.259	1	.131	
Error	63.389	1.981	32		
<u>T₂</u>					
Between subjects					
Course recency	4.023	4.023	1	1.525	
Error	47.483	2.638	18		
Within subjects					
Pre-post	.010	.010	1	.015	
Course recency x Pre-post	.007	.007	1	.011	
Error	11.726	.651	18		

These effects are represented in Figure 29. The accompanying pre and post means are: T₁ RC-2.99, 3.16; T₁ NRC-4.20, 4.62; T₂ RC-4.66, 4.66; T₂ NRC-3.96, 4.02.

From Figure 29 it is observed that the same separation occurs between T₁ RC and T₂ RC as in PC performance. Thus the T₂ RC subjects were residually high, comparatively, on both PC and TC and the T₁ RC subjects were low on both. Interesting, however, is the inverted performance of the NRC groups on TC as compared with their performance on PC although the effect fails to reach significance on a Tukey test. However, there is a suggestion

to the effect that T₂ is not as efficacious for NRC groups as is T₁.

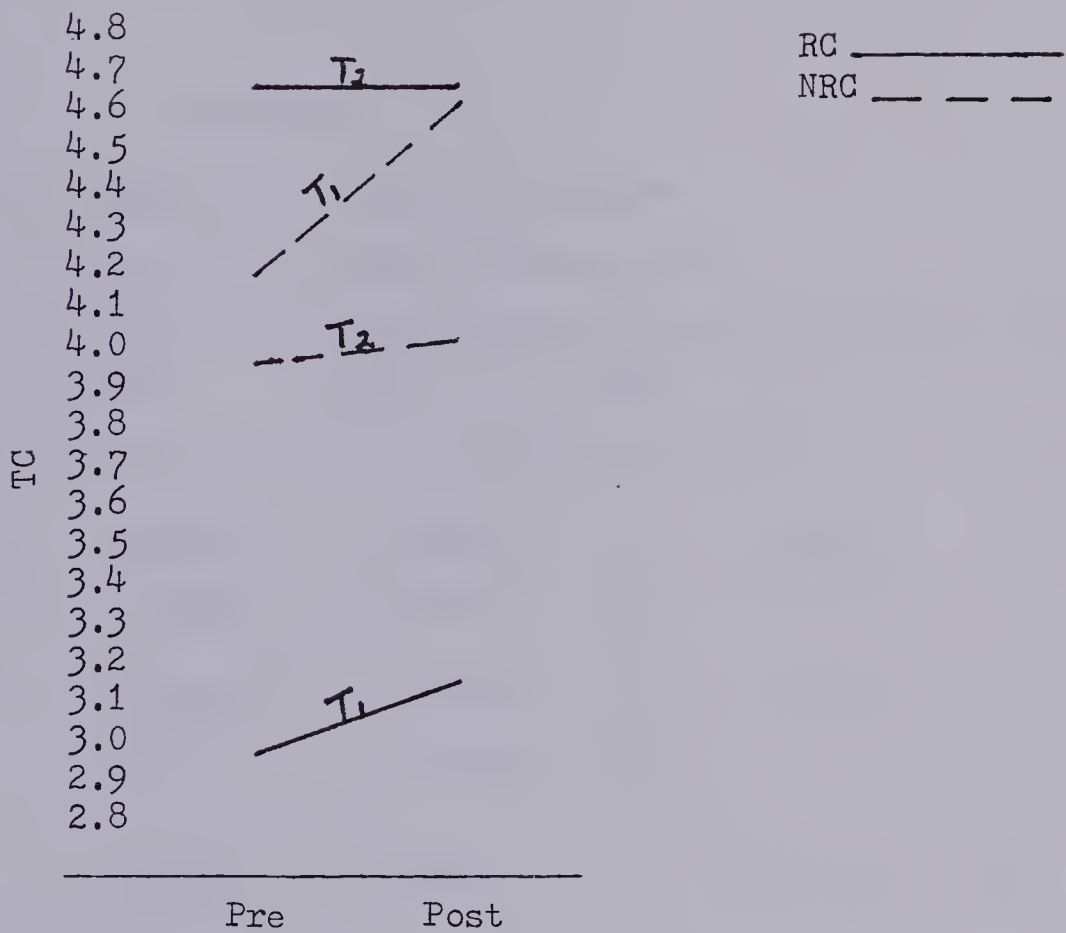


Figure 29. TC pre-post performance by course recency.

Location of zero subjects reveals that in T₁ all six were RC subjects. The pre and post means adjusted for zero subjects would be: T₁ RC-3.55, 4.55; T₁ NRC-no change; T₂ RC-no change; T₂ NRC-4.29, 4.21. Thus it seems that the T₁ RC group suffered most from 'zeros' but it still maintains its low position even when adjusted for zero subjects.

Age in relation to PC and TC performance. Small and not significant correlations were found between age (in years) and PC Pre ($r=-.112$) and Post ($r=-.070$); between age and TC Pre ($r=-.038$) and Post ($r=.026$). (See 'Correlation Matrices for all Variables', Appendix F.)

A three-way (crossed design) Analysis of Variance involving treatment groups, age groups (blocked: up to and including 29 years; 30-39 years;

40-49 years; 50 plus years), and PC Pre-Post, indicated a significant interaction of the three factors--treatment group by age group by PC Pre-Post ($p < .01$)--but no main effect of age. These results are summarized in Table 57.

Table 57

Summary of Three-way Analysis of Variance

Treatment Groups by Age Groups on PC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.924601	.924601	1	3.9196	
Age groups	.539314	.179771	3	.7621	
Treatment group x Age group	1.23781	.412602	3	1.7491	
Error	10.851	.2358913	46		
Within subjects					
Pre-post	1.98996	1.98996	1	23.5741	.01
Treatment group x Pre-post	.493934	.493934	1	5.8514	.05
Age group x Pre-post	.396006	.132002	3	1.5638	
Treatment group x Age group x Pre-post	.228316	.761052	3	9.0158	.01
Error	3.883	.084413	46		

These results are represented in a two-dimensional form in Figure 30. The accompanying pre and post means are: T₁ Age₁-1.66, 1.73; T₁ Age₂-1.24, 1.41; T₁ Age₃-1.74, 1.71; T₁ Age₄-1.26, 1.63; T₂ Age₁-1.45, 2.12; T₂ Age₂-1.70, 2.02; T₂ Age₃-1.56, 1.78; T₂ Age₄-1.40, 1.93.

From Figure 30 it is observed that there is a marked distance between T₁ Age₂ and T₂ Age₂. (A Tukey test indicated a significant difference at

$p=.05$; C. diff.=.536, $df=50,8$ for the Post test means.) Also noted is that Age₁ appears to do better under T₂ than under T₁. (A Tukey test indicated a significant difference in change scores at $p=.05$; C. diff.=.536, $df=50,8$.)

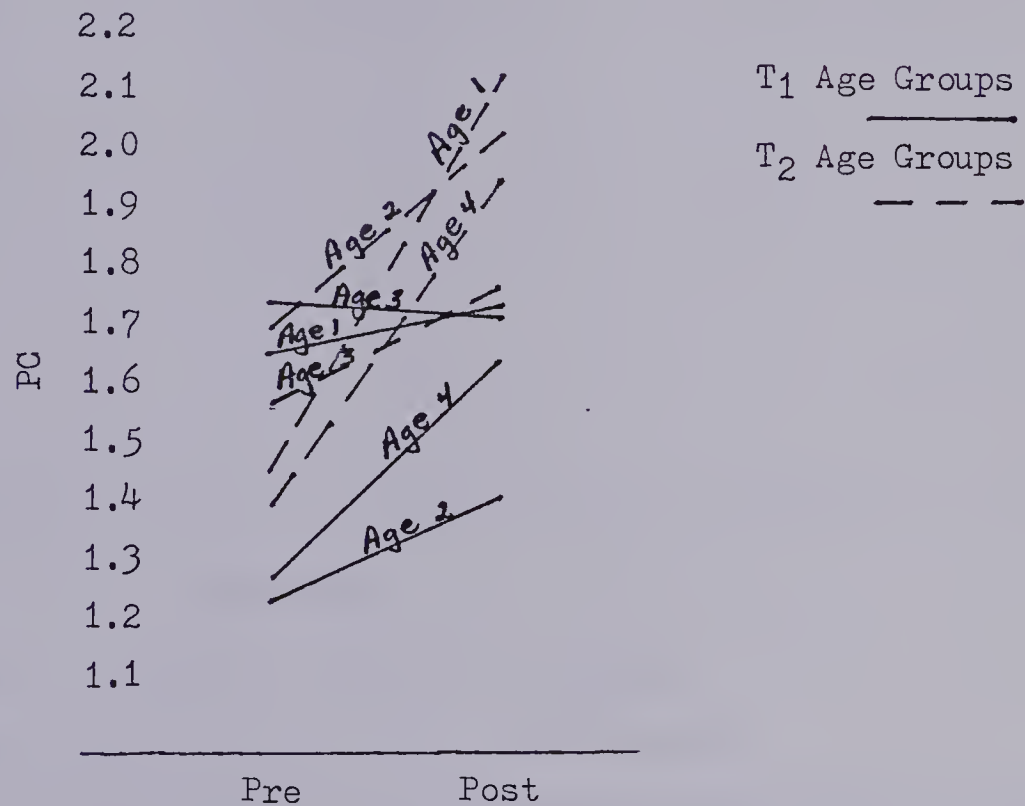


Figure 30. PC pre-post performance by age groups.

The CL group composition, area distribution, and RC/NRC composition of the age groups are presented in Table 58. The data suggest that with respect to Age₂ there appears to be a residual selection bias in that T₁ Age₂ subjects are overwhelmingly from CL₁ and CL₂ groups (RC and NRC being balanced). With respect to the cited better performance of T₂ Age₁ as compared with T₁ Age₁, CL group representation appears fairly well balanced but an overwhelming proportion (5 out the 6 subjects) of T₂ Age₁ subjects were NRC--the NRC group being statistically significant PC-Pre-Post increasers.

With respect to age in relation to TC performance, a three-way Analysis of Variance involving treatment groups, age groups, and TC Pre-Post, indicated a significant age group and Pre-post interaction ($p<.05$). These results are summarized in Table 59.

Table 58

Age Group Composition by CL Group, Area, and RC/NRC for Treatment Groups

	% of T		CL				Area				RC	NRC
	N	Group	CL ₁	CL ₂	CL ₃	CL ₄	A	B	C	D		
T1 Age ₁	8	23.5	1	3	2	2	4	1	1	2	4	4
T1 Age ₂	8	23.5	3	4	1	0	2	3	1	2	4	4
T1 Age ₃	7	20.6	0	2	2	3	0	2	5	0	1	6
T1 Age ₄	11	32.4	6	2	2	1	3	0	3	5	4	7
T2 Age ₁	6	30	1	2	2	1					1	5
T2 Age ₂	6	30	1	0	3	2					3	3
T2 Age ₃	5	25	0	2	2	1					3	2
T2 Age ₄	3	15	1	0	2	0					0	3

Table 59

Summary of Three-way Analysis of Variance:

Treatment Groups by Age Groups on TC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	1.30034	1.30034	1	.4184	
Age groups	11.5715	3.85716	3	1.2410	
Treatment group x Age group	6.0821	2.02736	3	.6523	
Error	142.976	3.1082	46		
Within subjects					
Pre-post	.357469	.357469	1	.2885	
Treatment group x Pre-post	.565559	.565559	1	.4565	
Age group x Pre-post	14.2823	4.76078	3	3.8425	.05
Treatment group x Age group x Pre-post	2.66351	.887835	3	.7166	
Error	56.993	1.23898	46		

It is interesting, however, that when TC was adjusted to exclude zero subjects, a three-way Analysis of Variance involving the same factors indicated a significant main effect of age group ($p<.05$). These results are summarized in Table 60.

Table 60

Summary of Three-way Analysis of Variance:

Treatment Groups by Age Groups on Non-zero TC Pre-Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.116045	.116045	1	.0991	
Age groups	11.0395	3.67983	3	3.1425	.05
Treatment group x Age group	9.66967	3.22322	3	2.7525	
Error	45.669	1.171	39		
Within subjects					
Pre-post	1.35680	1.35680	1	2.6438	
Treatment group x Pre-post	2.51160	2.51160	1	4.8940	.05
Age group x Pre-post	1.81090	.603634	3	1.1762	
Treatment group x Age group x Pre-post	2.26756	.755853	3	1.4728	
Error	20.015	.5132051	39		

The results of the foregoing three-way Analyses of Variance are represented visually in Figure 31. The accompanying means are presented in Table 61 together with the means of the Age groups for each treatment separately.

The quite markedly negative performance of Age2 on the unadjusted TC is noted from Figure 31. (Tukey tests indicate that Age2 differs signifi-

cantly from Age1 at $p=.05$; C. diff.=1.365, $df=46,4$ on change scores.) And it is the performance of Age2 that is markedly improved by the exclusion of zero subjects. Examination of the treatment group means in Table 61 indicates that whereas the adjustment did not alter the T2 Age2 profile (which shows a negative change), the T1 profile then reflected a positive change. Also noted from Table 61 is the comparatively low mean and negative change of the T2 Age4 group (not of statistical significance and the number of subjects was only 3). A further observation from Figure 31 is the residual age group rank order of performance. A one-way Analysis of Variance on TC pre scores indicated significant age group differences ($p=.02$), as summarized in Table 62. Scheffé tests indicated significant differences between Age groups 1 and 2 ($F=3.12$; $df=3,50$; $p=.03$).

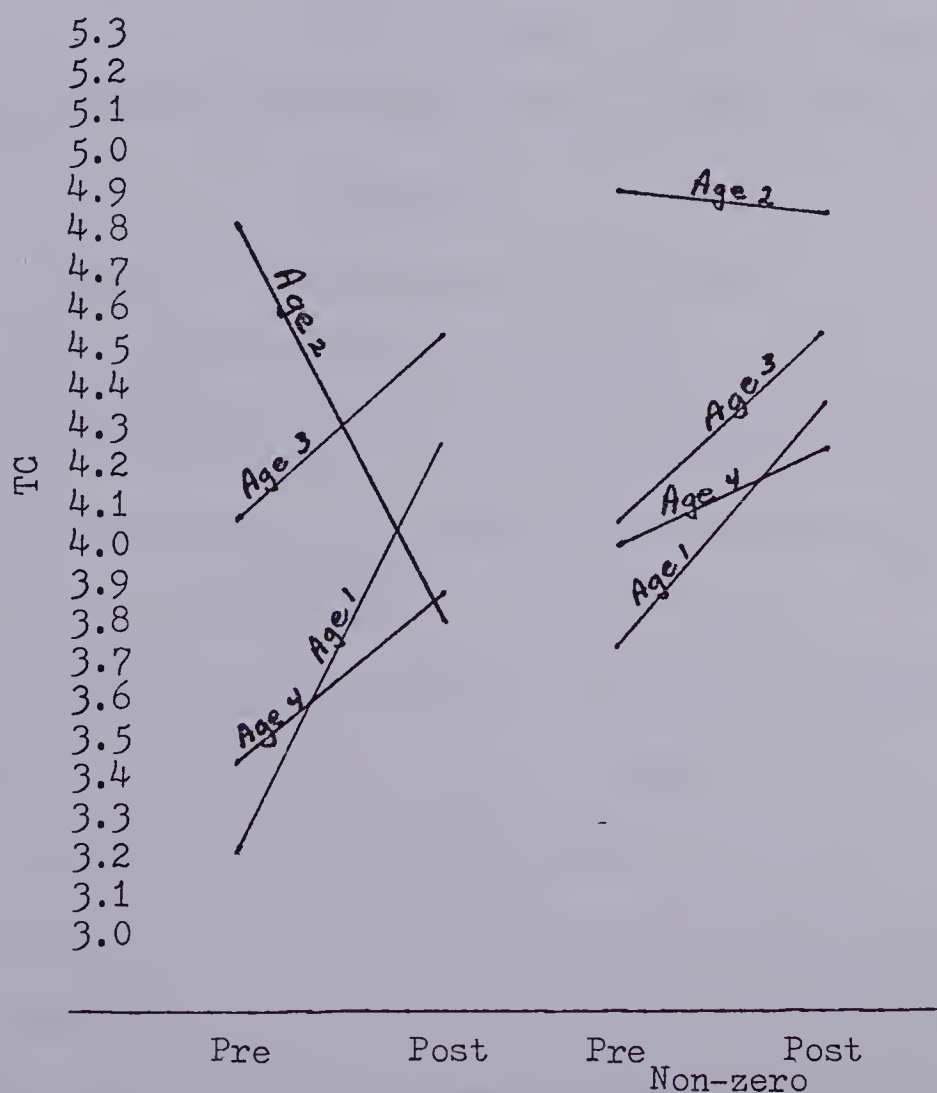


Figure 31. TC pre-post and non-zero TC pre-post by age groups.

Table 61

Means of Age Groups on TC and Adjusted TC

	TC			Adjusted TC		
	N	Pre	Post	N	Pre	Post
T ₁ Age ₁	8	2.95	4.15	7	3.37	4.06
T ₂ Age ₁	6	3.57	4.38	5	4.28	4.86
Joint Age ₁	14	3.21	4.25	12	3.75	4.39
T ₁ Age ₂	8	4.53	3.29	5	4.54	5.26
T ₂ Age ₂	6	5.22	4.50	6	5.22	4.50
Joint Age ₂	14	4.82	3.81	11	4.91	4.85
T ₁ Age ₃	7	4.10	4.53	7	4.10	4.53
T ₂ Age ₃	5	4.08	4.52	5	4.08	4.52
Joint Age ₃	12	4.09	4.53	12	4.09	4.53
T ₁ Age ₄	11	3.40	4.12	9	4.16	4.70
T ₂ Age ₄	3	3.67	3.00	3	3.67	3.00
Joint Age ₄	14	3.46	3.88	12	4.03	4.28

Table 62

Summary of One-way Analysis of Variance:

Joint Age Groups on TC Pre

Source	S.S.	M.S.	D.F.	F	p
Age Groups	21.648438	7.22	3	3.73	.016
Error	96.704834	1.93	50		

With respect to the relation of zero subjects and course recency to the age group performance, it will be recalled that TC post zero subjects were all T₁'s and all RC's. Zero subjects were located in the age groups as follows: Age₁- 1 T₂ pre and 1 T₁ post; Age₂- 3 T₁ post; Age₄- 2 T₁ post. The pre TC Age₂ ratio of RC and NRC was balanced (7:7); the pre TC Age₁

ratio was overbalanced in favor of NRC (5 of the 9 subjects being T2 subjects)--a point of minor significance, apparently--(see Table 58 and Figure 29).

Thus it would seem that Age₁ membership and NRC in the context of T₂ go with a good PC increment; Age₁ membership alone goes with a good TC increment; nothing much can be said about Age₂ membership in relation to PC because of the selection bias; but in respect to TC performance, Age₂ subjects, having attained a relatively high level, appear not likely to respond well to either treatment although variability in T₁ performance was noted.

Study Purpose 5: To discern and describe group profiles based upon the variables central to the study and directly relevant to the central purposes of the study.

Groups of individuals who appear to merit such attention are:

(a) 'top' scorers, (b) stabilizers and regressors, and (c) zero TC scorers.

'Top' scorers. It will be recalled that in connection with Study Purpose 2 (which was concerned with an investigation of the residing relationship between PC and TC) a consideration of the 'top' scorers (i.e. CL₄ and TC Levels 5 and 6) led to the identification of three such groups: High PC only, High TC only, and Jointly High PC and TC. The pre and post distributions of these groups are given (for purposes of comparison) in Table 63 along with the respective RI means for T₁.

In connection with Table 63 it is noted that there was an increase in high scorers for T₁ from 41.2% (of the 34 subjects) on the pre to 64.7% on the post, an increase of 23.5%; for T₂ the change was from 50% pre to 80% post, an increase of 30%. T₁ increments were rather consistently distributed across the three groups (High PC group increased by 2 subjects; High TC by 3 subjects; Jointly High by 3 subjects) whereas the T₂ increment was

most noticeably concentrated in the High PC only group (an increase of 8 subjects) with a marked decrement of 4 subjects in the TC only group.

In terms of internal dynamics, the following observations were made: (a) With respect to the number of shifts across groups (in and out), T₁ recorded 4 as compared with 6 for T₂; (b) With respect to the number of 'newcomers', T₁ recorded 9 as compared with 7 for T₂; (c) With respect to 'stabalizers', T₁ recorded 9 as compared with 3 for T₂; and (d) With respect to 'drop-outs', T₁ recorded 0 and T₂ recorded 1. In terms of movement, it would seem that T₂ was the more dynamic group.

Table 63

Pre and Post Distribution of 'Top' Scores for T₁ and T₂
and Respective RI's for T₁

	T ₁		T ₂		N	% of Total N (N=54)	% of Top N*	Pre RI	Post RI
	(n)	%	(n)	%					
<u>Pre</u>									
High PC	(4)	11.8	(1)	5	5	9.3	20.8	30.3	
High TC	(8)	23.5	(6)	30	14	25.9	58.3	27.4	
Jointly High	(2)	5.9	(3)	15	5	9.3	29.4	18.0	
	(14)		(10)		24				
<u>Post</u>									
High PC	(6)	17.7	(9)	45	15	27.8	39.5		26.0
High TC	(11)	32.4	(2)	10	13	24.1	34.2		39.6
Jointly High	(5)	14.7	(5)	25	10	18.5	26.3		35.4
	(22)		(16)		38				

* Pre N=24, Post N=38

Of interest is the pattern of mobility to the top post groups.

With respect to newcomers to the Top PC group, for T₁, 3 came from CL_{1/2} and 1 from CL₃, and quite similarly for T₂, 3 came from CL_{1/2} and 2 from CL₃. Newcomers to the Top TC group came, like their resident predecessors, from all the lower CL groups in somewhat similar proportions; pre TC scores ranged from 2.0-4.7. There was one newcomer to each Jointly High treatment group, each came from the immediately preceding level (CL₃, TC₄). Clearly, numbers are inadequate to permit the formulation of generalizations except that low residual levels do not preclude high post performances.

With respect to RI, it is noted from Table 63 that the High PC group recorded the highest residual mean but regressed to the position of lowest post mean. Although the High TC group recorded the highest post RI mean, it was the Jointly High group who started from a low residual mean but recorded the greatest increment (17.4 points).

With respect to Top scorers by area, the data are presented in Table 64.

Table 64

Pre and Post Top Scorers by Area for T₁

Area	A	B	C	D
<u>Pre</u>				
High PC	2	0	2	0
High TC	2	2	3	1
Jointly High	$\frac{0}{4}$	$\frac{0}{2}$	$\frac{2}{7}$	$\frac{0}{1}$
<u>Post</u>				
High PC	3	0	2	1
High TC	2	3	4	2
Jointly High	$\frac{1}{6}$	$\frac{0}{3}$	$\frac{2}{8}$	$\frac{2}{5}$

Thus, not only did Area C contribute the most people to the T₁ sample (10) but also the highest number of Top scorers as well as the highest proportion of Top scorers per contributed sample (70% pre and 80% post). Area B, which contributed only 6 people in total, was noticeably lower than Areas A and C with respect to the number and proportion of Top scorers, and it is noted that there were no Top PC or Jointly High subjects from this area, pre or post. On the other hand, Area D (sample size=9) was the lowest contributor of pre Top scorers but recorded the most consistent and greatest proportionate increase of the four areas.

The data with respect to the constitution of the top score groups by course recency and age is presented in Table 65.

Table 65

Pre and Post Top Scorers by Age and Course Recency

According to Treatment Groups

			Age1		Age2		Age3		Age4		RC		NRC	
	T ₁ N	T ₂ N	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
<u>Pre</u>														
High PC	4	1	2	0	0	0	1	1	0	1	0	1	4	0
High TC	8	6	2	1	3	3	1	1	2	1	3	3	5	3
Jointly High	2	3	0	1	0	2	2	0	0	0	0	1	2	2
	<u>14</u>	<u>10</u>	<u>4</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>4</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>3</u>	<u>5</u>	<u>11</u>	<u>5</u>
<u>Post</u>														
High PC	6	9	2	2	2	4	0	1	2	2	2	2	4	7
High TC	11	2	2	0	4	0	2	1	3	1	5	0	6	2
Jointly High	5	5	1	3	0	1	2	1	0	5	0	2	5	3
	<u>22</u>	<u>16</u>	<u>5</u>	<u>5</u>	<u>6</u>	<u>5</u>	<u>4</u>	<u>3</u>	<u>5</u>	<u>8</u>	<u>7</u>	<u>4</u>	<u>15</u>	<u>12</u>

With respect to pre Top scorers, it is observed from Table 65 that: High PC's were not Age2 but that High TC's were visibly a comparatively high percentage Age2; Jointly High's (few in comparison) were not Age4--in fact few high scorers were Age4 (comparatively); and, with the exception of 1, High PC's were not RC's. With respect to post Top scorers, it is observed that: High PC's were visibly Age2 and with the exception of 1, Jointly High's were not Age2; Top scorers were most infrequently Age3 and most frequently Age4; and, just as pre Top scorers tended to be, comparatively, NRC's so also did the post Top scorers.

Stabalizers and regressors. Descriptive data with respect to PC stabalizers and regressors are summarized in Table 66 and data with respect to TC stabalizers and regressors are summarized in Table 67.

Table 66

PC Stabalizers and Regressors: Descriptive Data by Treatment Groups

		Area				CL				TC Performance				Age				RC	NRC
		A	B	C	D	1	2	3	4	+	=	-	0	1	2	3	4		
<u>Stabalizers</u>																			
T ₁	N=7	3	3	1	0	3	2	0	2	3	2	0	2	1	4	0	2	4	3
T ₂	N=4					0	0	2	2	3	0	1	0	1	1	2	0	2	2
<u>Regressors</u>																			
T ₁	N=8	2	2	3	1	0	1	4	3	6	2	0	0	2	2	3	1	2	6
T ₂	N=0					0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$\bar{5}$	$\bar{5}$	$\bar{4}$	$\bar{1}$	$\bar{3}$	$\bar{3}$	$\bar{6}$	$\bar{7}$	$\bar{12}$	$\bar{4}$	$\bar{1}$	$\bar{2}$	$\bar{4}$	$\bar{7}$	$\bar{5}$	$\bar{3}$	$\bar{8}$	$\bar{11}$

From Table 66 it is noted that the proportion of T₁ 'nil progress' subjects was higher than T₂ (44.1%:20%) and that there were no regressors in T₂. Area D recorded only 1/9 'nil progress' subjects; Area B, 5/6. The total number of CL_{3/4} 'nil progress' subjects was higher than that of

CL_{1/2}. The majority of 'nil progress' subjects was observed to progress on the TC continuum. No particular patterns would seem to emerge, on the basis of these data with respect to age and course recency.

Table 67

TC Stabalizers and Regressors: Descriptive Data by Treatment Groups

		Area				TC					PC Performance			Age				RC	NRC
		A	B	C	D	2	3	4	5	6	+	=	-	1	2	3	4		
<u>Stabalizers</u>																			
T ₁	N=10	2	2	5	1	0	0	3	7	0	6	2	2	1	2	4	3	2	8
T ₂	N=6					1	0	1	4	0	6	0	0	3	0	1	2	1	5
<u>Regressors*</u>																			
T ₁	N=4	2	0	1	1	2	0	1	1	0	4	0	0	3	0	1	0	1	3
T ₂	N=8					0	0	2	5	1	7	1	0	0	6	1	1	4	4
		$\bar{4}$	$\bar{2}$	$\bar{6}$	$\bar{2}$	$\bar{3}$	$\bar{0}$	$\bar{7}$	$\bar{17}$	$\bar{1}$	$\bar{23}$	$\bar{3}$	$\bar{2}$	$\bar{7}$	$\bar{8}$	$\bar{7}$	$\bar{6}$	$\bar{8}$	$\bar{20}$

*Zero subjects excluded

It is observed from Table 67 that the number of 'nil progress' TC subjects was the same for each treatment but the proportion per group was higher for T₂ (70%:41.2%). Again Area D had few 'nil progress' TC subjects as well as Area B (which was high on PC 'nil progress' subjects). Again, the majority of the 'nil progress' subjects was observed to progress on the PC continuum. Again, no definite patterns are visible with respect to age, however, when age totals are combined across PC and TC, it is observed that there is a suggestion that there is a higher proportion of Age₂ subjects and possibly fewer Age₄ subjects. There appeared to be a larger representation of NRC's among the TC 'nil progress' people and on the combined number, the pattern is accentuated.

Scrutiny of the subjects revealed that there were 2 subjects who were stable across both dimension--1CL₂ and TC₅; the other CL₄ and TC₄.

Zero TC performers. Descriptive data with respect to zero TC performers are presented in Table 68.

Table 68
Zero TC Performers: Descriptive Data by Treatment Groups

		Area				TC Range		PC Performance			Age				RC NRC	
		A	B	C	D	Pre	Post	+	=	-	1	2	3	4	RC	NRC
Pre																
T ₁	N=3	0	0	1	2		0-4.8	3	0	0	1	0	0	2	3	0
T ₂	N=1						2.0	1	0	0	1	0	0	0	1	0
Post																
T ₁	N=4	0	2	1	1	0-5.0		2	2	0	0	3	0	1	4	0
T ₂	N=0							0	0	0	0	0	0	0	0	0
		$\overline{0}$	$\overline{2}$	$\overline{2}$	$\overline{3}$			$\overline{6}$	$\overline{2}$	$\overline{0}$	$\overline{2}$	$\overline{3}$	$\overline{0}$	$\overline{3}$	$\overline{8}$	$\overline{0}$

It is observed from Table 68 that Area A had no zero performers; PC performance generally increased; Age₃ had no zero performers and 3 out of the 4 post TC zero subjects were from Age₂; and all zero subjects were RC's. Scrutiny of the subjects revealed that all post TC zero subjects were CL₁ and CL₂ on their pre PCM scores and that one subject was zero both pre and post TCS.

Ancillary Purpose 5: To discern and describe age group performance profiles.

Age has been examined as a factor in PC and TC performance in connection with Study Purpose 4. It is now the intent to view performance through the lenses of the life-style theorists and thus to sketch age performance profiles for this particular study sample. Primarily, this section will consist of a consolidation of the previous analyses with respect to PC and TC but will be extended to include the RI performance of T₁.

It will be recalled that the Analysis of Variance involving treatment groups, age groups, and PC Pre-Post, indicated a significant interaction of the three factors. Ignoring selection bias at this point, a one-way Analysis of Variance on PC pre scores only of the combined treatment groups by age, indicated no significant age group differences. These results are summarized in Table 69.

Table 69
Summary of One-way Analysis of Variance:
Joint Age Groups on PC Pre

Source	S.S.	M.S.	D.F.	F	p
Age Groups	1.0904388	.36	3	2.05	.12
Error	8.8646088	.18	50		

On the other hand it will be recalled that the Analysis of Variance on the TC pre scores indicated significant age group differences ($p=.02$, see Table 61, p.183). These performance profiles are presented visually in Figures 32 and 33 (see solid lines).

From these figures it can be seen that there was little variation in PC mean among the age groups with the exception perhaps of Age₄ where a comparatively lower performance seemed to be evinced. In contrast, the performance profile of the age groups with respect to TC showed considerable variation. Noted is the relatively low level performance of the youngest age group (up to 29 years), the peak performance recorded by the second age group (30-39 years), and the progressive decline thereafter by Age₃ (40-49 years) and Age₄ (50 years plus).

With respect to the residual (pre) performance level of RI, the pattern is conveyed in Figure 34. There appears to be a slight tendency for Age₃

to have evinced a comparatively low RI residual performance level (not statistically significant).

With respect to performance change over the pre-post period, the post performance age group means are also included in Figures 32, 33, and 34.

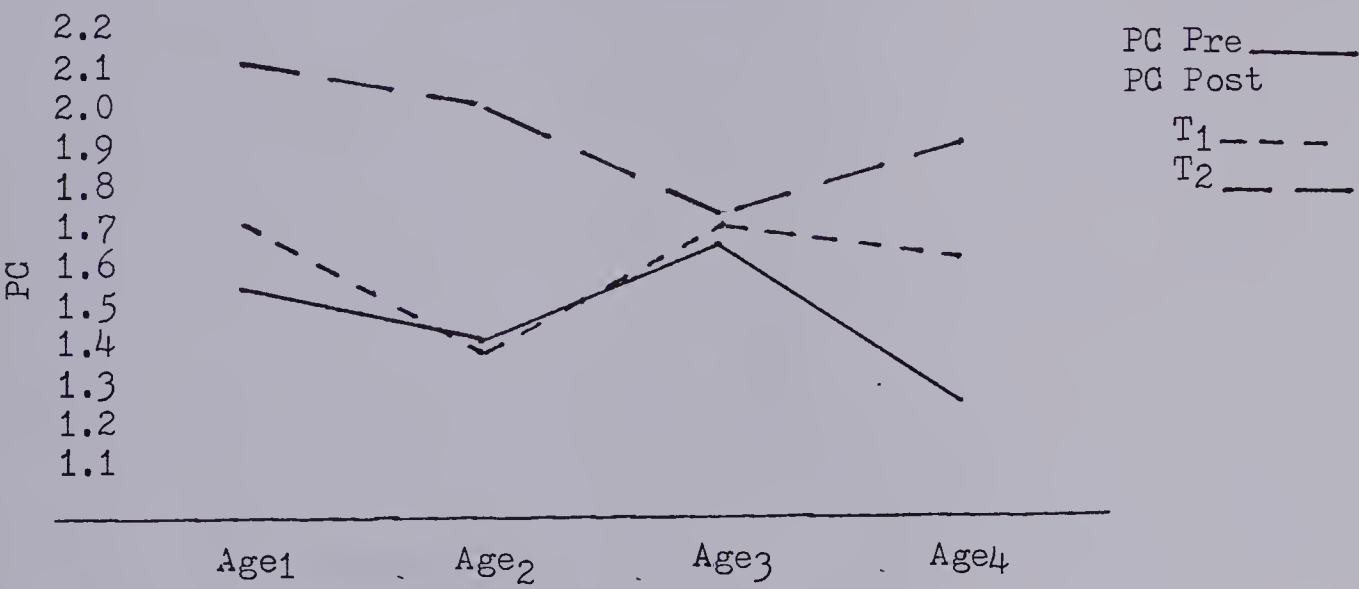


Figure 32. PC Pre and Post means by age groups.

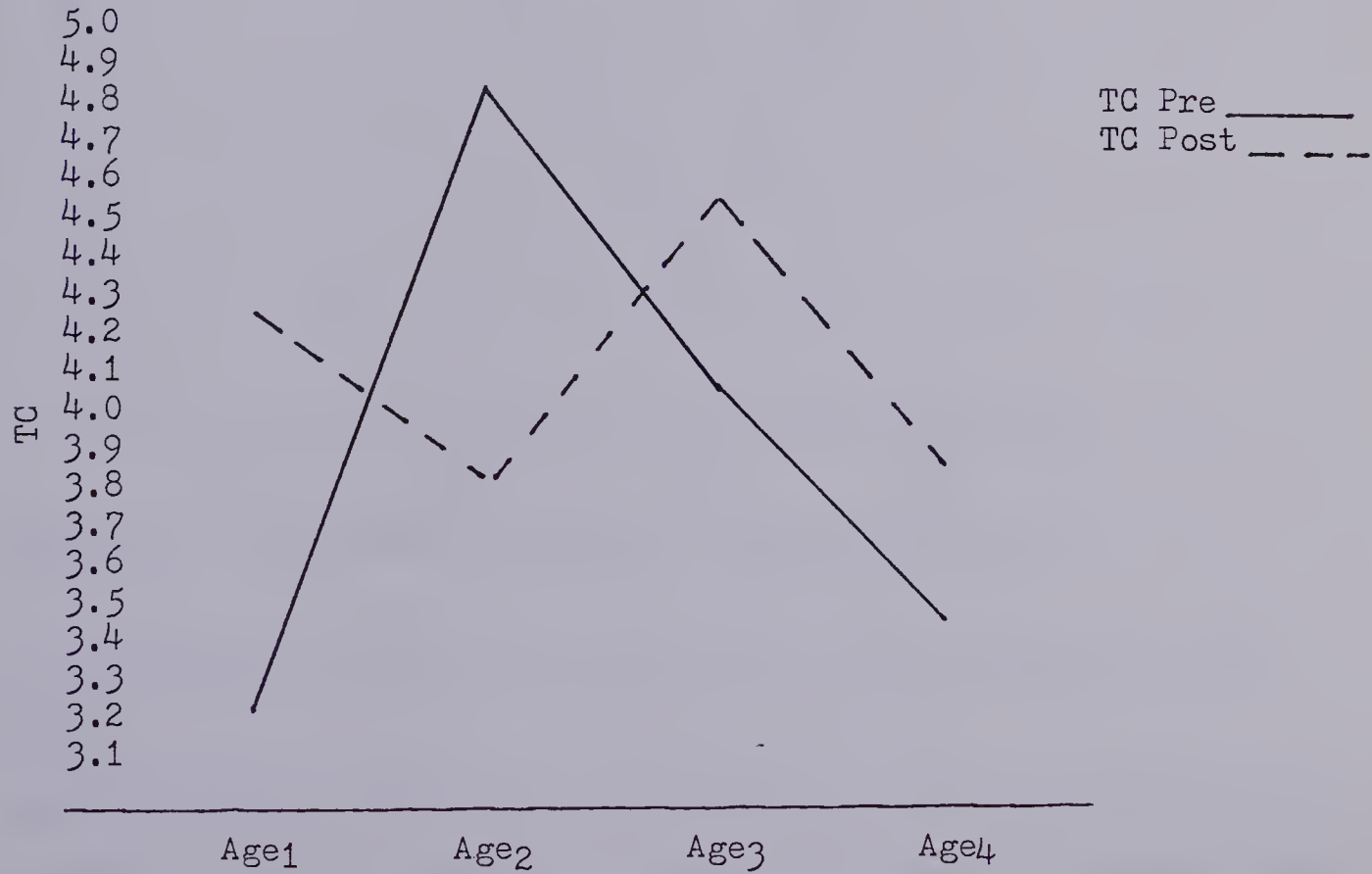


Figure 33. TC Pre and Post means by age groups.

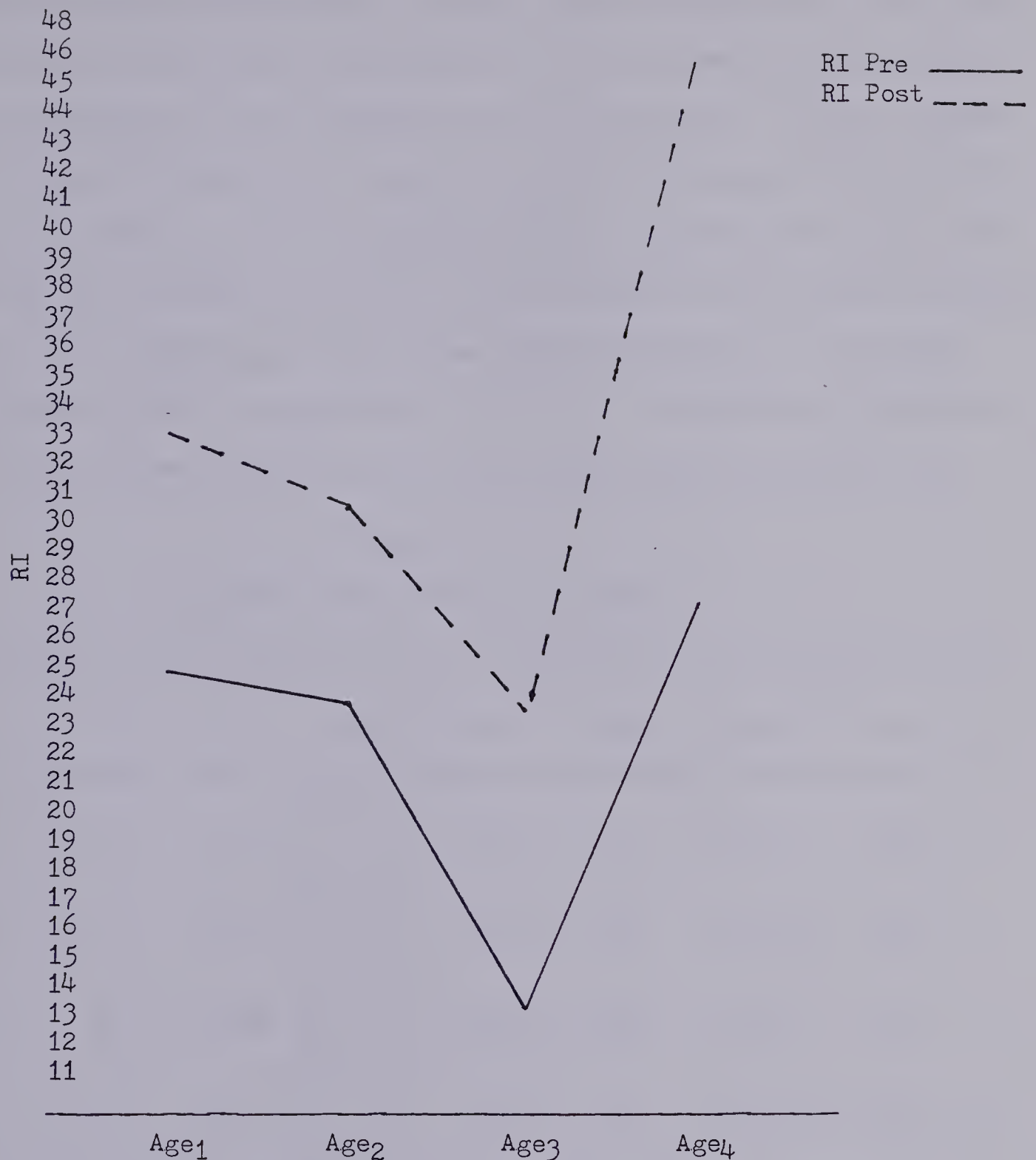


Figure 34. RI Pre and Post means by age groups for T₁.

The accompanying means, pre and post, for these profiles are given in Table 70.

From Figure 32 and Table 70 the non-growth of Age₃ (both T₁ and T₂), as compared with the other groups, is noted. Age₂, and to a lesser extent Age₁ and Age₄, would seem to have prospered within the T₂ group. On the other hand, with respect to TC, a startling regressed post Age₂ mean was

recorded, as shown in Figure 33. A glance back at Table 60 (p. 181) indicates that T₁ zero subjects contributed to the lower mean but regardless, the T₂ Age₂ mean (no zero subjects) was still regressed. T₂ Age₁ recorded the greatest PC increment and Age₁ also recorded the greatest TC increment. On the RI it was Age₄ who not only recorded the largest increment but also finished in the highest position. A one-way Analysis of Variance on RI post scores by age groups indicated a trend toward significance of age group differences (p=.07), as summarized in Table 71. A Scheffé test indicated differences between Age₃--the lowest group--and Age₄ at p=.09 (F=2.40).

Table 70
Age Group Means on PC, TC, and RI

		PC		TC		RI			
	N	Pre	Post	Pre	Post	Pre	N	Post	N
Age ₁	14	1.57	T ₁ 1.73	3.21	4.25	25.0	8	33.5	6
			T ₂ 2.12						
Age ₂	14	1.44	T ₁ 1.41	4.82	3.81	23.9	8	30.9	7
			T ₂ 2.02						
Age ₃	12	1.67	T ₁ 1.71	4.09	4.53	13.3	7	23.7	7
			T ₂ 1.78						
Age ₄	14	1.29	T ₁ 1.63	3.46	3.88	27.3	10	45.9	10
			T ₂ 1.93						

Table 71
Summary of One-way Analysis of Variance: Age Groups on RI Post

Source	S.S	M.S.	D.F.	F	p
Age groups	2211.1758	737.06	3	2.61	.07
Error	7332.6914	282.03	26		

The significance of these findings in respect to age group performance will be interpreted in the context of life-style theory and occupational development theory, in the next chapter of this report.

Summary of Key Findings

Residual Profile Levels and Selective Characteristics of the Sample(s)

(a) MJ. T₁ sample subjects ranged in scores from Stage 2(3) through Stage 4, the majority scoring within Stage 4 (modal unselected population level).

(b) PC/CL. The CL group distribution of the total sample was: CL₁-24.1%, CL₂-27.8%, CL₃-29.6%, CL₄-18.5%. These proportions are less favorable in terms of advanced development than those reported for college and university trained subjects. There was a larger proportion of CL₃ and CL₄ subjects among the T₂ volunteers (subjects) than in T₁ and a consequent higher proportion of CL₁ and CL₂ subjects among the T₁ volunteers.

(c) TC. 93% of the joint sample scored at the Phase II-III levels, a figure which compares very favorably with Fuller's reported finding of 60-64% of her inservice teacher sample at this level. Again, a higher proportion of high performance subjects was recorded for T₂ than for T₁ (75%:42% at Phase III; 50%:29% at levels 5 and 6).

(d) RI. The mean residual percentage number of communications above the factual level was 22.94% for T₁.

(e) Other selected characteristics. With respect to sex, approximately three-fourths of the subjects in each sample were females. Approximately half of the subjects in each treatment group had up to and including 9 years of teaching experience. 64.9% of the subjects had up to and including 4 years of teacher training; a higher proportion of T₁ subjects was so located (70.6% as compared with 55% of T₂ subjects). 38.9% of the

subjects were engaged in course work or had been recently so engaged; a slightly higher percentage of T₁'s being so engaged than T₂'s (41.2%:35%).

With respect to age, 48.2% of the subjects were 40 years and older and the percentage of T₁ older teachers was somewhat higher than T₂ (33.3%:14.8 %; T₁ mean=41.06 years, T₂ mean=38.30 years).

(f) T₁ sample by area. The method of sampling (volunteer solicitation) resulted in unequal numbers of subjects in the areas: Area A-9 subjects, B-6 subjects, C-10 subjects, and D-9 subjects. Similarly, sampling resulted in unequal CL representation by area: Areas B and D had no CL₄ subjects while Area C had 4 of the 6 CL₄ subjects; Area D had 88.9% of its sample in CL_{1/2} groups. With respect to TC, again Area D recorded the lowest mean score, 2 of the 3 Phase I subjects were from Area D. Area D along with Area B recorded low RI means; Area A recorded the highest mean.

With respect to the other selected characteristics, noted imbalances were: Areas A and D had no Age₃ (40-49) representation; 4 of the 6 Area B subjects were NRC (no recent course) people.

Study Purpose 1: MJ in relation to PC/CL

Hypothesis 1: There exists a significant positive relation between individual scores on the PCM and on the MJI.

The value of the Pearson product moment correlation between the two sets of scores was $r=.421$ ($p=.05$). (It is to be remembered that the actual pairing of the scores was such that high PC scores were paired with medium--but high for this sample--MJ scores.) Analysis of Variance showed a tendency toward CL group effects ($p=.12$) and this took the form of a pattern in which the upper CL subjects scored at the upper end of the MJ score range for this sample whereas the scores of lower CL subjects ranged across the MJ score range (from end to end). Thus, the hypothesis is accepted only with considerable reservation.

Study Purpose 2: Residual relation between PC/CL and TC scores and their relation to RI

No large or significant correlations were found between any of these variables. There was a suggestive trend toward CL group effects in relation to TC scores ($p=.07$). The pattern appears to be one of increasing TC scores with increasing PC scores through CL₃, the pattern being broken by the T₁ CL₄ group's negative performance (seemingly a selection bias). There were no significant CL group effects with respect to RI scores.

Three 'top' scoring groups were discernible: High PC (9.3% of the total sample), High TC (25.9 % of the sample), and Jointly High PC and TC (9.3% of the sample). The High PC group recorded the highest RI--30.3, the High TC next--27.4, and the Jointly High the lowest RI--18.0.

Study Purpose 3: Relative efficacy of treatments and T₁ changes in RI

PC. There was a significant Pre-Post effect and a significant treatment group effect but most evident was the superior performance of T₂. The findings of a number of analyses which probed the relation of CL group membership to PC performance suggest that while the CL groups retained their relative positions across Pre-Post, group changes were not uniform. Although T₂ CL groups did better than T₁ CL groups the pattern appears to be one of diminishing returns with increasing CL, most markedly so for T₁ (T₁ CL₃ and CL₄ recorded regressed post scores). The final post positions showed no significant differences for T₂ CL groups but significant differences for T₁ CL groups.

TC. There was no significant Pre-Post effect (nor treatment effect) on TC scores although T₁ was observed to perform somewhat better than T₂ and when zero subjects were excluded from the analyses, the trend was accentuated to the point of statistical significance. Variances were observed to have changed: the variance of T₁ increased while that of T₂

decreased.

TC in relation to PC/CL. In the main, small and not significant correlations existed between TC and PC, pre and post (T₁ TC post correlated significantly with PC pre).

There appears to be differential performance by CL group; the effect being more marked for T₂ CL groups. A consistent pattern across the two treatments was the markedly low performance (pre and post) of the CL₁ group. The T₁ CL₃ and CL₄ groups were observed to perform relatively well whereas the T₂ CL₃ and CL₄ groups recorded 'nil progress'--an inversion of the PC performance pattern. Exclusion of zero subjects resulted in the erasure of CL group effects; the lower CL groups were effected more by 'strike-outs'.

T₁ RI performance. Interestingly, RI pre correlated negatively and significantly with RI post ($\underline{r} = -.406$; $\underline{p} = .05$).

A significant difference was recorded between pre and post scores, the pre mean being 21.57 and the post mean, 34.73.

There was a suggestion of a trend toward differential RI performance by CL groups. Noticeable was the substantial performance increment recorded by the CL₃ group and the relatively low rank position (pre and post) and the negative performance recorded by the CL₄ group although in the latter case, there was insufficient data to confirm the trend--there were only 4 subjects and there appeared to be some confounding with area-selection effects.

Study Purpose 4: The role of selected variables

Area. There was a significant interactive effect of area and PC pre-post, the pattern being one of a marked increase for Area D and a regressed post mean for Area B. Scrutiny of the subjects revealed that Area D subjects were primarily CL_{1/2}, the CL_{1/2} groups being the groups who evinced the greatest pre-post increments. It was tentatively surmised, however, that the poor performance of Area B was likely a true area effect.

With respect to TC area was not a significant factor.

There was a significant interaction of Area and RI Pre-Post, the pattern being one of a very favorable performance pattern for Areas A, B, and D, and 'nil progress' for Area C. Scrutiny of the subjects again indicated the possibility of a confounding of area and CL group effects.

Sex, teacher experience, and teacher training in relation to PC. There were no significant effects, main or interactive, of sex, teacher experience, or teacher training.

Course recency in relation to PC and TC. There was a significant interactive effect of treatment group, course recency, and PC Pre-Post, the pattern being one of a superior T₂ RC group (pre and post positions) and a comparatively inferior T₁ RC group (pre and post positions), reflecting an initial selection bias; and a slightly superior performance over the pre-post period recorded by the T₂ NRC group as compared with T₁ NRC.

With respect to TC, there was a significant interaction of treatment group and course recency, the pattern being once again a superior performance recorded by the T₂ RC group and a markedly inferior performance by the T₁ RC group (even when adjusted for zero subjects). T₁ NRC's were this time observed to perform better from pre to post than their T₂ counterparts.

Age in relation to PC and TC. Small and not significant correlations were found to exist between age (in years) and PC (pre and post) and TC (pre and post).

A significant interactive effect was found between treatment group, age group, and PC Pre-Post, the pattern being one of a significant difference between the T₁ and T₂ Age₂ group (30-39 years) which existed on the pre and thus must be attributed to selection bias. Predominant also in the pattern was the superior performance across the period of T₂ Age₁ as

compared with T₁ Age₁. Scrutiny of the subjects indicated that T₂ Age₁ subjects were overwhelmingly NRC subjects, T₂ NRC subjects being good performers across the pre-post period.

With respect to TC, there was a significant interaction of age group and Pre-Post, the pattern of which was interesting in that Age₂ which ranked in the top position on the pre TC exhibited a marked regression on the Post test to place the group in the bottom post performance position. When the zero subjects were excluded, Age₂ held the top post rank position but still recorded 'nil progress'. Observation of Age₂ performance by treatment group revealed that when zero subjects were excluded, the performance pattern of T₁ was positive but that of T₂ remained negative. Another feature of the age group Pre-Post pattern was that Age₁ recorded the most gain over the period. Interesting also was the rank order of the age groups: Pre (from top to bottom)--Age₂, Age₃, Age₄, Age₁ and Post--Age₃, Age₁, Age₄, Age₂.

Thus it would seem that Age₁, NRC, and T₂ go together toward a favorable PC performance whereas Age₁ tends to progress nicely on the TC continuum. The tendency to 'strike out' seems to occur mainly within the Age₂ group, some do and some don't, but it appears that in the main, Age₂ subjects did not respond well in terms of TC progression to either treatment.

Study Purpose 5: Profiles

'Top' scorers. The proportion of top scorers increased from pre to post, the increase being more marked for T₂. Whereas the T₁ increases were distributed across the three categories, the T₂ increases were concentrated in the High PC group. The T₂ group was the more dynamic group in terms of 'shuffling'. Top scorers came from across all CL categories.

The High PC group, which was residually the highest RI group, ended in the lowest RI position; the High TC group ended in the highest RI position;

and the Jointly High group recorded the greatest RI increment (17.4 points).

The highest proportionate contributor of top scorers was Area C, the lowest was Area B which did not register in the High PC or Jointly High categories. Area D, also a low proportionate contributor of top scorers, recorded the greatest and most consistent proportionate increase.

With respect to age, Age₄, although low on pre contributors, made a favorable post showing; Age₂, which was high on pre TC but low on pre PC, made a favorable post PC showing; and Age₃ added just 1 subject over the period and thus ended with the least number of top scorers.

Stabalizers, regressors and zero TC's. The proportion of 'nil progress' PC's was higher for T₁ but lower for TC. T₂ recorded no PC regressors. Area B was high on PC 'nil progress' subjects (5 of its 6 members) but was low on TC 'nil progress'; Area D recorded the fewest overall 'nil progress' subjects. More 'nil progress' PC subjects were CL_{3/4} and all post TC zero subjects were CL_{1/2}. The only suggestion of an age pattern was with respect to zero subjects where 3 of the 4 post zero TC's were Age₂. The proportion of NRC's was somewhat greater than RC's overall but more marked with respect to TC 'nil progress' patterns and the exception was that all zero TC's were RC's.

Ancillary Purpose 5: Age group profiles

The residual PC performance by age groups indicated no significant differences but it was observed that Age₄ performance was slightly lower. There were significant age group performance differences on TC, the pattern being one of a low Age₁ performance, a rapid-peaking for Age₂ and a progressive decline thereafter not quite reaching the Age₁ performance level. Although not of statistical significance, the RI residual performance level of Age₃ was somewhat lower than that of the other age groups.

In the main, post profiles were higher than pre profiles with noticeable

exceptions being the 'nil progress' on PC recorded by Age₃ and T₁ Age₂, and the markedly negative post TC performance of Age₂. The largest PC increment was recorded by T₂ Age₂; the largest TC increment by Age₁; and the largest RI increment by Age₄.

The results of the study which have been presented in detail in this chapter will be interpreted in Chapter VI within the context of the theoretical and empirical findings reviewed in Chapter II.

CHAPTER VI

SYNTHESIS OF FINDINGS, INTEGRATIVE CONCLUSIONS, AND PRESENTATION OF PROPOSITIONS

The purpose of this final chapter is twofold: (a) to interpret and evaluate the findings of the study, as detailed in Chapter V, within the research context and within the broader theoretical and empirical fabric, as discussed in Chapter II; and (b) to extend the research effort through the generation of propositions to guide future research in the area.

Discussion of Findings, Conclusions

Some Descriptive Statistics Re Composition of the Sample

With respect to this 'volunteer-select' group of teachers, descriptive statistics indicate that: the majority are female; about one-third of the group have a University degree in Education; about half have less than ten years of experience; over a third are involved (or have been recently involved) in university course work; and about half of the group are forty years of age or older. How these statistics compare with the unselected teacher statistics is not ascertainable at this point but, in general, such statistics would seem to be consistent with the trends in teacher population as described by Fuller (see page 72 of this report).

Residual Psychological and Professional Profile Levels of Study Teachers

In the main, the psychological level of this 'select' group of teachers appears to be low. The higher CL group proportions are visibly below the proportions reported in other studies for university students and, it may be surmised, for the general unselected population. Further, the MJ scores do not exceed the modal general population level--i.e. they do not exceed the 'law and order' orientation. These findings, in both cases, seem to be in accord with other reports (cf. Hunt & Joyce, 1967;

Cavanaugh, 1976) but, to the author's knowledge, they are the first to be reported with respect to experienced inservice teachers.

With respect to level of teacher development, the results, when compared with those reported by Fuller (1969) for inservice teachers, would seem to confirm the 'select' nature of the present group. Comparatively, a much higher proportion of the present group recorded scores at the Phase III concern level (concern about pupils). However, it seems important to note that with the 'select' sample the pre TC means and medians hovered at the fourth level: 'Are pupils learning what I'm teaching?' (i.e. concern with pupil mastery of the curriculum). Such an observation is consistent with the reported observations of Goodlad (1976) and Lortie (1975) of unselected teacher populations.

In view of the lack of any normative scores for RI, no conclusion can be drawn with respect to favorability of a mean of 22.9% of teacher communications above the factual level. As a quantitative figure it seems low but such a finding would seem to be consistent with the 'content mastery' theme and with the conclusions of Lortie (1975).

Residing Relation Between Measures of Psychological Development: MJ and CL

The scoring pattern in this study indicated that whereas the subjects ranged across the CL continuum, they failed to score higher than the Conventional level on the MJ continuum. Such a pattern is in accord with the findings of Cavanaugh (1976). Thus, although the obtained correlation between the two sets of scores was significant--although small ($r=.421$)--the correspondence is between high scores, theoretical and attained, on PCM as compared with theoretical and attained medium scores on the MJI at the upper score ranges.

The analysis of CL group membership in relation to MJ score attainment

suggested a possible relation of such membership ($p=.12$). The CL group score dispersion pattern on MJ showed that the CL_{3/4} subjects consistently scored at Stage 4 ('law and order' orientation) whereas CL_{1/2} subjects ranged across the score range from Stage 2 (instrumental relativism) through Stage 4.

On the basis of the limited results of this study, it would seem that high CL is not a sufficient condition to ensure principled thinking in the moral arena for this 'select' group of teachers; whether high CL is a necessary condition for principled thinking was not testable in the present study.

Residing Relationships Among Measurements of Conceptual Level, Teacher Development and Teaching Style

As indicated by the small and insignificant correlations obtained among the pre scores of the dependent variables, there appear to be no consistent linear relationships across the score continua. However, there was a suggestion of a relationship between CL group membership and TC score attainment, the pattern generally being one of increasing TC mean with increasing CL group through CL₃ with the largest difference residing between CL₁ and CL₂. The pattern of CL₄ reflected a bias in the self-selection process: the T₂ CL₄ volunteer subjects were, on the average, highly developed teachers whereas T₁ CL₄ volunteers were not.

The pairing of low CL and low TC level is seen as consonant with theory as is the mutually ascending curve through CL₃ and the T₂ CL₄ group performance pattern.

No significant consistent pattern was found between CL group membership and reflectivity in teaching, as indexed by the RI. Thus the pattern found by Hunt and Joyce (1967) with preservice teachers--i.e. that high CL subjects tended to evince higher RI scores than did low CL subjects--

appears not to hold with these 'select' teachers.

The tracking of high scoring subjects--i.e. CL₄ subjects and/or TC Level 5/6--led to the identification of three top scorer categories: High PC, High TC, and Jointly High. Again noted is the small percentage of the 'select' sample subjects assignable to these categories. Such data would seem to lend support to the allegations of those who insist there are few exemplars of the 'ideal' teacher in the teaching population (cf. Howe, 1972; Shultz & Wolf, 1973). Noted also is the comparatively small number of High PC's and Jointly High's; the highest proportion of the top scorers falling within the High TC category. Suggested again then is that there is a dearth of psychologically mature teachers among so-called 'select' teachers. Rarely, it would seem, does maturity occur on both developmental dimensions for the same individual.

With respect to RI performance of these top scorers, the High PC group did perform best (but only slightly higher than the High TC group), an observation that tends to be supportive of the finding of the Hunt and Joyce study (1967) to the effect that CL₄ subjects tend to use a more reflective teaching style.

Treatment Efficacy, CL Group Performance

The results of the experiment indicated significant CL progression over the time period, as indexed by PCM performance; no significant progression in level of teacher development, as indexed by TCS performance; and, for T₁ (the Teacher Enrichment Experience group), a significant increase in teaching reflectivity, as indexed by the RI. The study did not permit an assessment of the degree of progression that might have occurred naturally without the benefit of any deliberate treatment.

The most important finding of the study was the indisputably superior performance evinced over the time period by the T₂ group--the 'Hawthorne-

expectancy' treatment--as compared with the performance of the T₁ group with respect to CL progression. Further, T₂ was better for all CL groups. The CL group performance pattern, as charted on change scores, was one of diminishing returns with increasing CL. This pattern was somewhat more marked for T₁ in that the CL₃ and CL₄ groups actually recorded regressed PC scores. Thus, at the time of the post test and with this 'select' group of teachers, it appears that the simple 'Hawthorne-expectancy' approach to the inducement of CL progression is more potent--and more potent for all CL groups--than the 'Teacher Enrichment Experience' treatment which was modeled in accord with Hunt's CL theory and his derivative model for the training of teachers.

Although there was no statistically significant growth effect on the TC dimension the T₁ group did show progression whereas the T₂ group did not; the differences did not, however, reach the point of statistical significance. CL group performance differences were once again significant. The CL₁ group (joint composition) evinced a markedly low TC performance (as they did on the TC pre also)--absolutely (concerns were at Levels 2 and 3--'adequacy' and transitional) and comparatively. The CL₂ group appeared stable at Level 4--'Are pupils learning what I'm teaching?' while the CL₃ and CL₄ groups registered the TC increment but failed to rise above the Level 4 concerns. It should be noted however that separately the two treatment groups showed a great deal of variability in CL group performance--different CL groups performed differently within each of the treatments--although these differences were not statistically significant within the context of the two treatments together. Of particular interest is the noticeably better performance of the T₁ CL₃ and CL₄ groups as compared with the T₂ CL₃ and CL₄ groups.

It is interesting to note that the exclusion of zero TC subjects--i.e. 'strike-outs'--from the analyses resulted in a statistically significant interactive effect of treatment group and pre-post in favor of the T₁ group. CL group effects were also erased, the lower T₁ CL groups registering the most effect of the 'strike-out' phenomenon.

With respect to the T₁ performance on the RI, there was a suggestion of differential CL group performance. The CL₃ group evinced a better performance than the other groups and the CL₄ group evinced a very poor performance although in the latter case the inadequate number of subjects precludes any definitive trend statement.

The proportion of top scorers was observed to have increased on the post tests, the increase being more marked for T₂ but also more concentrated in the High PC category whereas the T₁ increases were more evenly distributed across the three top scorer categories. Thus, again there is the suggestion that the 'Hawthorne-expectancy' treatment is more successful in moving these 'select' teacher subjects into the top PC/CL scoring position than is T₁ but T₂ appears to be somewhat less than successful in moving such subjects into the top scoring TC Levels.

It is also to be noted that T₁, on the post measures, recorded a higher proportion of 'nil progress' subjects on the CL dimension and a lower proportion of such subjects on the TC dimension than did T₂. T₂ recorded no PC regressors (T₁ had 8 regressors) and no TC 'strike-outs' (T₁ had 4 such subjects). Again it is suggested by the data that T₂ had a more positive effect on all subjects with-respect to the inducement of CL progression than did T₁. However, upon consideration of the number of T₁ 'nil progress' subjects on the PC/CL dimension and the number of 'strike-outs' on the TCS, might these phenomena not be indicative of some process

of 'dedifferentiation and disintegration' of present structures (as conceptualized by Werner, 1972, in his regression interpretation of progression), a process which accompanied the Teacher Enrichment Experience but not the 'Hawthorne-expectancy' effect. An alternative explanation would seem to reside in the possibility of a selection bias--a bias which predisposed the T₁ group more to 'nil progress' and 'striking-out' than the T₂ group. Although Homogeneity of Variance tests indicated no significant differences in variability between the two treatment groups on pre PC and TC scores, there were indications in the data of bias in the self-selection process. In particular, one such bias (cited in the discussion of residual relationships among the dependent variables) was in the form of the T₂ CL₄ subjects being, on the average, at a higher level of teacher development than were their T₁ counterparts at the time of the pre test. Thus location of these selection biases and other factors which relate to performance on the dependent variables would seem important toward the assessment of the 'predisposing' factor explanation.

Other Factors Relating to PC/CL and TC Performance

Of the factors deemed worthy of investigation in this study, three were found to relate in some meaningful way to the performances of concern: area, which was examinable only in relation to the performance of the T₁ group, course recency, and age. The analyses indicated no significant effects of sex of subject, teaching experience, or teacher training.

There was an interactive relationship found between Area and PC Pre-Post and also between Area and RI Pre-Post.- Area did not relate in any way to TC performance.

The performance pattern in relation to PC Pre-Post showed that one area, which was in the lowest rank position on the pre PC (there were no

significant area differences on the pre PC), evinced a significant score increment on the post test which placed the area in the final top rank position. It was noted that the study group from this area was comprised almost entirely of CL₁ and CL₂ subjects--these being the CL groups which evinced the greatest T₁ PC/CL increments--so there may be at least a partial confounding of area selection and CL group effects in this case. It is to be noted though that the performance of this area on the TC dimension and the RI dimension was favorable, thus suggesting a differentially responsive area effect. The other different PC Pre-Post pattern took the form of a regressed post score mean. The generally poor PC Pre-Post performance of the subjects of this area, across CL, together with the observation of a similarly regressed TC post mean (not of statistical significance) suggests a real area effect, a real lack, comparatively, of developmental progression on either dimension. The poor performance of this area undoubtedly mitigated somewhat the over-all T₁ performance record.

With respect to the role of course recency there was clear evidence of a selection bias. The T₂ RC group (recent course work group) was clearly a higher scoring group on both PC and TC pre tests than was its T₁ counterpart. Both groups were observed to perform similarly with respect to pre-post increment. However, on the amount of change induced on the PC dimension, T₂ was found to be significantly better for NRC subjects (no recent course work) than was T₁; but on the amount of change induced on the TC dimension, T₁ was found to be significantly better for NRC subjects. Although the evidence is far from conclusive, it is suggested that perhaps subjects who have not had recent university professional training might find the 'Hawthorne-expectancy' treatment, or similar motivational programs, conducive to personal development but unless there is a content

dimension to the inservice program, TC progression will not be induced.

With respect to age in relation to PC performance, again there was clear evidence of a selection bias: T₂ Age₂ (30-39 years) was a higher scoring group on the PC pre test than T₁ Age₂. The joint Age₂ group was observed to be the highest group with respect to residual level of teacher development (pre TC mean score). Whether this finding is peculiar to this particular sample or is more generally true in a 'select' teacher population would seem to be a task for future research.

With respect to age and the degree of change over the study period, T₂ Age₁ (20-29 years) did better than T₁ Age₁ on the PC dimension and the Age₁ group, although lowest on the TC pre, recorded the largest change score from pre to post. The joint Age₂ group did not respond well to either treatment although the regression was considerably less marked upon the exclusion of zero TC scorers; the Age₂ group being most visibly affected by the presence of such 'strike-outs'. Thus, with this sample, the fortunate combination of Age₁ (20-29 years), NRC (no recent course work), and T₂ (a 'Hawthorne-expectancy' treatment) seems to go with PC/CL progression, and just being Age₁ seems associated with TC progression under either treatment, whereas just being Age₂ seems associated with a markedly poor response, in terms of TC score increments, under either treatment. Again, such age group differential responsiveness requires further investigation.

Summary of Age Group Performance

The results of the pre PC score analyses indicated little variation in mean CL across the four age groups of this 'select' teacher sample. Thus, age per se does not seem to be a major factor in relation to level of conceptual development. Such a finding (and conclusion) would seem consonant with CL theory and research; however, in view of occupational developmental theory and life-style theory, the operation of a selection factor in

the formation of this pool should not be readily discounted.

It is with respect to level of professional development that age appears to be related. The pattern, with this 'select' teacher group, was one showing a comparatively low level of teacher development for Age₁, a rapid peaking for Age₂ (although not theoretically optimal), and a progressive decline thereafter for Age₃ and Age₄. The pattern exhibited by the pre-forty ages would seem to be consonant with both life-style and occupational developmental theory--seemingly evidence of the achievement thrust, the self-aggrandizement motive, the making of one's professional self. The absence of a post-forty peak seems rather significant. Whether this phenomenon is attributable in some way to selective attrition, developmental arrest, generational socialization differences, or some other unknown factor(s), the situation merits investigation.

The age group performances on the behavioral variable of teaching style, as indexed by the RI, showed little variation across the pre means for the age groups with the exception of Age₃ where a visibly lower mean was noted--the low rank persisting through the post RI as well. Thus, if it can be assumed that the issue is one of acquisition of technology, then it would appear that Age₃, for some reason, evinces a comparatively lower technical level of competence. On the other hand, Age₄ appears to be a very receptive group, as evinced by RI increment, to the acquisition of teaching technology of the type presented in the Teacher Enrichment Experience.

If it can be assumed that pre-post differences serve as some indication of receptivity to program effectiveness (and/or receptivity to change), then, on the basis of such changes in PC/CL, TC, and RI scores, Age₁ (20-29 years) would seem to emerge as a growth-oriented age group, personally,

professionally, and behaviorally. This generalization would seem to be consistent with Hall's profile of career stages (Hall & Morgan, 1977) and with the occupational socialization theory of Schein (1971)--the individual is most susceptible/responsive to the influences of socialization in the early stages of career development.

Although personal and behavioral changes seem to be positive for Age₂ (30-39 years), this period appears to very unpredictable with respect to attempts to programmatically induce further professional development. According to theory, this period is characterized by an initial 'soul-searching'--What am I doing here? Why?--followed by 'rooting' (Gould, 1975; Gould & Sheehy, 1974; Levinson, 1978). Perhaps the 'striking-out' (becoming philosophical and negative instead of focussing upon contemporary personal teaching concerns) is related to this period of 'soul-searching' and 'becoming one's own man' (Hall & Morgan, 1977), especially when one foresees the constraints of the profession, when answers do not seem to be immediately forthcoming.

Age₃ (40-49 years) appears to be a period of comparative performance abatement and stability. The trend seems to be continued with Age₄ (50 years and over) with respect to professional development although the pattern is more variable with respect to personal development where the residual level was comparatively low but the increment was positive and substantial, and with respect to teaching style where the increment was much greater and the post position much higher than any of the other age groups. Thus, with this 'select' group of teachers, the post-forty period which encompasses the mid-life transition and the restabalization period of the life-style theorists, appears to be one of maintenance (Hall & Morgan, 1977) of the residual performance level followed by some

recovery (?) with respect to psychological development--an observation which seems consistent with the purported reflective orientation-- and a burst of performance with respect to the acquisition of a technical skill, a behavior which may be associated in some way with accrued experience. Thus, in so far as competence is evinced in behavior, the post-forty peak, which is predictable on the basis of theory, is observed in this 'select' teacher group seemingly in response to inservice programming.

It should be noted that the above observations are based upon group mean performance levels and that there is much variability among individuals within these groups. And, as with the evaluation of residual performance levels, the cross-sectional method of comparing performance across age groups is descriptive only, it does not permit valid causal inferences (Baltes & Schaie, 1973, 1974). There is very much a need for longitudinal studies to track these relationships across the life and career span.

General Statement of Major Conclusions

Descriptive Characteristics of 'Select' Teachers

1. In terms of Conceptual Level and Moral Judgment Level, the psychological level of development of the 'select' teacher group seems quite descriptive of the general unselected population and is not comparable to the higher norms of university educated subjects.

2. In comparison with other reported norms for experienced teachers, the level of professional (teacher) development is favorable, indicative of a 'select' teacher group. However, the modal level of the group, which was found to center around concern with pupil mastery of the curriculum, was less than the more optimal or mature levels of concern, i.e. concerns related to pupils learning what they need as persons and concerns with improving self as teacher and all that influences pupils.

3. As indicated by the proportion of the 'select' group which attained top or optimal scores on the indices used in this study, there is a dearth of 'ideal'/mature teachers. Further, the highest proportion of these top scorers are High TC only subjects; very few are High PC only and Jointly High PC and TC. Thus, if the theoretically-derived assumption that the double-based state of maturity (i.e. the Jointly High PC and TC state) is most conducive to 'self-renewal' of teachers, then not only is there a dearth of 'self-renewing' teachers but also the forecast for the advancement or evolvment of currently more adequate schooling, short of intervention, would seem gloomy indeed.

Residual (Undisturbed) Relations Between CL and Other Central Variables

1. CL and MJ. With the 'select' teacher group, the prevailing pattern of CL-MJ relationship would seem to be one in which higher Conceptual Levels go with normatively located MJ scores (Conventional Level, Stage 4), there being no Post-Conventional scoring subjects in the study sample; whereas, the range of MJ scores for the lower Conceptual Levels is from low (Pre-Conventional Level, Stage 2) through Conventional Level, Stage 4. Thus, study data precluded an investigation of the theoretical overlap with respect to the higher levels of these two developmental continua.

2. CL and TC. The pattern of the relationship between CL group membership and TC score attainment appears to be one of increasing TC level with increasing CL group through CL₃. ('Dirty' data precluded investigation of the relationship for the CL₄ group.)

3. CL and RI. There appears to be no consistent pattern between CL group membership and reflectivity in teaching, as indexed by RI, with the 'select' teacher group.

Treatment Efficacy

1. The 'Hawthorne-expectancy' treatment is associated with a greater

degree of progression on the CL continuum than is the 'Teacher Enrichment Experience' treatment--a treatment designed in accord with CL theory and which was designed to increase flexibility in teaching. Further, the potency effect seems to hold across CL groups.

2. There appears to be a minimal effect of either treatment upon inducement of progression on the TC continuum although the 'Teacher Enrichment Experience' group did evince some progression whereas the 'Hawthorne-expectancy' group did not.

3. A further indication of a possible CL-TC differential effect of the two treatments is seen in connection with change in the proportions of the top scorer categories. The 'Hawthorne-expectancy' treatment appears to be more potent in moving subjects into the high CL category (CL₄) whereas the effects of the 'Teacher Enrichment Experience' appear to be more generalized in that the increases are more evenly distributed across the three high scorer categories. There is some indication that the 'Teacher Enrichment Experience' may have a more disruptive effect upon behavior than does the 'Hawthorne-expectancy' treatment.

4. Although the evidence is far from conclusive, it appears that the 'Teacher Enrichment Experience' type programs may well be efficacious in increasing reflectivity in teaching style.

Factors Relating to PC/CL and TC Performance

1. CL group membership. Treatment effects with respect to PC/CL progression would seem to distribute in a pattern of diminishing returns with increasing CL, the pattern being somewhat more marked for the upper CL groups of the 'Teacher Enrichment Experience' group. The pattern with respect to TC progression appears to be somewhat similar with the exception of the possibility that the upper levels (CL₃ and CL₄) of the 'Teacher

Enrichment Experience' group do better than their counterparts in the 'Hawthorne-expectancy' group. In view of the observed low score level of the CL₁ group(s), pre and post, on the PCM and the TCS, it is concluded that such subjects are 'poor risks on the professional market'.

Although the CL₃ group recorded the greatest RI increment and the CL₄ group recorded the poorest performance, there is insufficient data to warrant the formulation of any generalization with respect to the relationship of CL group membership to change in RI level.

2. Area. With respect to the 'Teacher Enrichment Experience', there is some indication that some school jurisdictional areas seem more prone than do other areas to treatment effects upon CL progression. Area does not seem to relate in any consistent way to TC progression.

3. Recency of course work. There is some suggestion that a 'Hawthorne-expectancy' type (motivational based) treatment may be more conducive to CL progression for subjects who have not had any recent course work whereas a 'Teacher Enrichment Experience' type (with a content dimension) treatment may be more conducive to TC progression for subjects who have not had any recent course work.

4. Age. Although the study evidence is far from conclusive, there is a suggestion that the youngest teachers (up to 29 years, in this study) seem most receptive, or respond best, to socialization influences in terms of both psychological and professional development. Also, the period which in this study encompassed the years from 30-39 appears to be one of heightened sensitivity, professionally, and unpredictable responsiveness to socialization influences (as indicated by 'strike-outs' in the Teacher Enrichment Experience and a general decremental pre-post performance).

Age Group Performance Profiles

In the main, the age group performance profiles of the study subjects

conformed to patterns which might have been expected on the bases of life-style theory and the situation-specific context of teaching. In the main, the early stages of the teaching career seem to be characterized by professional growth and a relatively high performance peak, consonant with Kaufman's (1974) notation of a pre-forty performance peak. However, it would seem, at least with this 'select' group, that with the post-forty teaching population the second performance peak does not occur, at least with respect to psychological or professional development, although there is some indication of a behavioral peak in the oldest group (50 years and over). The pattern of the post-forty population with respect to performance on the developmental dimensions, and most visibly on the professional development dimension, is one of a comparatively and progressively lowered level of development.

Reflections, Implications

Relationships Across Models/Levels of Development

The absence of major level correspondence between the two continua of Conceptual Level and Moral Judgment would seem to suggest either (a) domain specificity of development with respect to these two dimensions, or (b) theoretical and/or measurement inadequacies/errors. If the differences in the plumb lines represent credible observations then the question is posed as to whether such discreteness is a phase in the development toward maturity followed by an integration at a higher developmental level, or do the domains remain as discrete entities at maturity? Also, in view of the purported role of appropriate experience in the transition to Post-Conventional thinking (Kohlberg, 1973), it might be helpful to ascertain whether such discreteness holds with subjects in other occupations. Not to be readily discounted in connection with a discussion of the absence of

major level correspondence is the scoring credibility of the Moral Judgment Interview of which mention was made in Chapter III of this report. It might also be useful to investigate developmental level correspondence between Conceptual Level, as indexed by the Paragraph Completion Method, and Loevinger's ego development, as indexed by the Sentence Completion Test (Loevinger & Wessler, 1970).

Although age was not investigated in relation to Moral Judgment in the present study, in view of the age and generation diversity evinced in the study group, it would seem that the longitudinal method of studying such developmental relationships--i.e. the tracking of individuals across an extended period of career development--might well constitute a more credible method of study.

The evidence of a minimal overlap between the upper levels of the Conceptual Level continuum and the teacher development continuum, as indexed by the Teacher Concerns Statement, suggests that co-occurrence of maturity on these two continua is a rare phenomenon and not a 'given' in this educational context. However, in connection with the theory and measurement of teacher development, the content dimension and the role of learning may well be confounded with the developmental dimension thus obscuring the relationship between the developmental components. Obviously, there is a need for further work with the Teacher Concerns Statement in order to ascertain exactly what it does index, as well as a need to validate the theoretical basis of the instrument through longitudinal studies designed to track teachers across their formative career years. However, and notwithstanding these concerns, if the state of conjoint maturity on both dimensions is deemed desirable--if the logic of the argument is accepted--then surely there needs to be a deliberate

attempt to uncover ways and means to promote such an end.

Residual Levels of Development and Intervention (Inservice) Efficacy

If, given the appropriate environment, it is the natural predisposition of the organism to proceed toward maturity, then the comparatively low level of psychological development (and low optimal degree of professional maturity) evinced by a 'select' teacher group would suggest that this natural predisposition is not being nurtured in the context of teaching. (The wider implication of the foregoing statement is that higher level student development is also being discouraged, possibly curtailed by the overwhelming presence of 'dependent' teachers.)

If the pre-forty performance peak is construed to be in part a function of socialization and the post-forty peak to be in part a function of innovation (using Schein's 1971 terminology), then it would seem that person and context are more compatible in early career passage for the purposes of socialization than they are later in career passage for the facilitation of teacher innovation. Such an interpretation would seem to follow on the bases of the literature reviewed with respect to models of institutional/organizational practice (cf. Argyris and Schon, 1974; Hersey and Blanchard, 1972; McGregor, 1960; Owens and Steinhoff, 1976)--that is, while bureaucracy may facilitate a socialization process it may well discourage innovation. In view of the purported importance of inductory socialization to later career development (cf. Cogan, 1975; Fuller and Brown, 1975; Hall and Morgan, 1977; Lortie, 1975; Morrison and McIntyre, 1973), the nature of the teacher inductory socialization process merits attention. It would seem that the lack of a personalized, differentiated counselling process for neophytes, the lack of distinctive feedback in terms of desirable behaviors--desirable in terms of a scienti-

fic base and expert opinion--results in a socialization for conformity and adjustment rather than for progressive personal and professional development.

With respect to the capacity of adults to continue on a path toward maturity, psychological and professional, the results of the present study indicate that such progression can occur and occur across different residual levels of development (low to high), different age levels (23-64), and teachers with and without recent training. Although these factors may be influential in some way in determining the degree of developmental progression, it seems that area may well be related to program (intervention) responsiveness with respect to progression on the psychological developmental continuum but perhaps not on the professional development continuum. The finding that area interacted with PC pre-post coupled with the observation that the area which performed poorly (regressed) was also the area which received minimal administrative support for participation in the in-service program as reflected in allocation of teaching time for program participation strongly suggests the potency of the developmental context.

Although the lowest CL group was observed to progress on the CL continuum it was concluded that the low relative standing on both PC and TC post scores justifies a recommendation that this group is a poor risk on the professional market. Thus it would seem that attention should be given to either preservice entrant screening or to the generation of preservice programs designed to optimize CL progression.

With respect to the comparative efficacy of the two treatment approaches used in this study, it would seem that the clout of the simply-administered motivational treatment in the inducement of CL progression merits considerable and deliberate attention. Similarly, although the

'Teacher Enrichment Experience' program in this study was seemingly not as effective with respect to the inducement of CL progression, the observation that participant effects were more generalized across the three top scorer categories, would seem to justify its potential usefulness as an efficacious inservice program. It would seem that the issue may be one of the orchestration of motivation and content in inservice programming.

Clearly emergent from this total discussion is the implication that a broader view of professional development seems warranted--one that includes administrative-institutional development as well as a concentration on teacher development. There is a need to investigate the efficacy of such leadership-follower developmental models as the one proposed by Hersey and Blanchard (1972); there is a need to introduce variation and flexibility into the institutional environment as in being able to move back and forth across the 'mechanistic-organismic' continuum (Owens and Steinhoff, 1976) in deliberate response to the developmental needs of staff and to document such effects. There is also a need to investigate the possible effectiveness of specially trained developmental consultants with respect to the facilitation of teacher development, personal and professional, institutional development and the coordination/orchestration of both. It is toward this end--toward the objective of producing self-evolving teachers and self-evolving institutions--that the following conceptual model is presented as a basis for practice and research efforts.

A Model for Conceptualizing Staff-Institutional Development

The following is a simple conceptual model for the coordination of staff and institutional development. It is an interactive model premised upon generalized CL theory, that is, theory applicable to both person and institution.

The model, as presented in Figure 35, consists of two parallel developmental continua; the one on the left indexes person development, the one on the right indexes the development-inducing properties of the institution. Both continua are scaled from low level to high level. The person development scale is defined in terms of Hunt's developmental model (Hunt, 1975a; Hunt and Sullivan, 1974). With respect to the scaling of the development-inducing properties of the institution, points at the lower end of the continuum indicate an emphasis upon socialization for adjustment (conformity), the result of which is a joint static state of person-institution equilibrium which, by definition, is able to tolerate little diversity. By contrast, points at the upper end of the continuum indicate an emphasis upon socialization for growth, development, and innovation, the result of which is a jointly dynamic state of person-institution equilibrium which thrives on qualitative diversity. The results of the exposure of individuals to these varying practices are schematically represented within the parameters of the two continua.

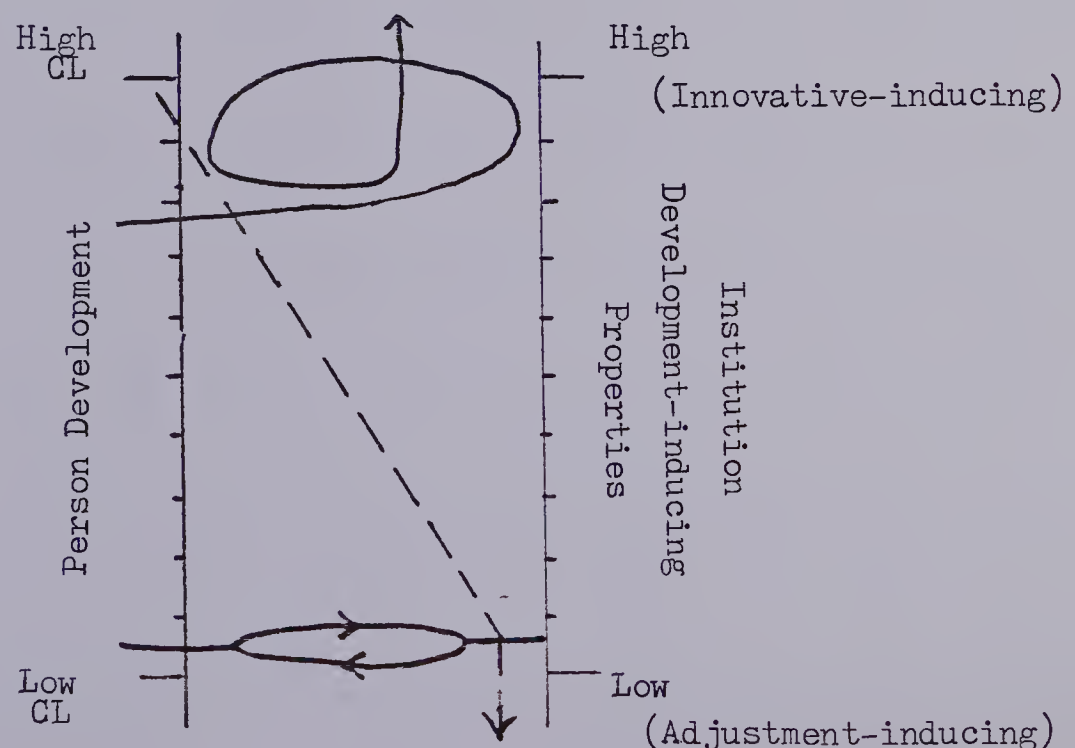


Figure 35. A model of staff-institutional development.

The broken line indicates the likely trajectory of what happens when a highly developed teacher is placed in a closed, low developmental-inducing institution. Such a projection, and other possible person-institution interactions, needs research documentation.

Not only is there a need to develop an instrument for the purposes of indexing the developmental-inducing properties of the institution, but also attention needs to be directed toward the identification of the analogues of CL development in the institutional sphere--the structural characteristics of the institution at varying levels of development, the sequence of development, the nature and kinds of experiences which induce structural development of the institution. As was indicated in the review of literature on occupation/institutional development, there is available a pool of related, compatible thinking on the topic. It is the coordination of the two areas which represents the new venture.

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APPENDIX A
CL Instrumentation and Scoring

The Paragraph Completion Method (PCM)

Name _____, _____, _____ Male
 (Last) (First) (Initial) Female

School _____ Grade _____

On the following pages you will be asked to give your ideas about several topics. Try to write at least three sentences on each topic.

There are no right or wrong answers, so give your own ideas and opinions about each topic. Indicate the way you really feel about each topic, not the way others feel or the way you think you should feel.

You will have about 3 minutes for each page.

1. What I think about rules...

Try to write at least three sentences on this topic.

2. When I am criticized...*
3. What I think about parents...
4. When someone disagrees with me...
5. When I am not sure...
6. When I am told what to do...

*The test format for each of these stems is the same as stem 1.

Scoring Criteria for 'Rules' from the Scoring Manual of Hunt et al., 1977

Specific Characteristics and Examples by Topic

RULES

- Score 0: Rules are reacted to negatively because they interfere with one's own self gratification or wishes. Typical reactions are complete rejection of rules and/or authority.
- Score 1: Rules are seen dichotomously (e.g. good - bad, right - wrong). The function or appropriateness of rules is not evaluated. Rules are frequently considered necessary to maintain order and control.
- Score 2: Rules are evaluated according to their function. While rules are seen as necessary the appropriateness or value of rules for certain situations is questioned. The necessity of rules being flexible and adaptable to change is stressed. Rules may be reacted to negatively because they interfere with personal freedom and independence.
- Score 3: Rules are evaluated by considering the particular situation to which they are being applied, and the effect upon himself and others. A decision is then reached according to the relative importance ascribed to these variables by the individual. His freedom of decision, and the impermanence and flexible nature of rules, are paramount.

"What I think about rules..."

Score 0

1. "I hate authority. I don't like to be told what to do. Why can't we give rules."
2. "There should not be more than there are. I feel like I am in prison. The rules that the teachers make up are stupid."
3. "I hate rules. I never obey them. Me and my friends criticize them."
4. "I don't like them. Rules are made to break. I feel they are also made to get you into trouble."

Score 1

5. "Some rules I think are good. Some rules I think are bad. I think we always should have rules."
6. "Rules are good. They teach us different things. Some rules I don't like because they are too strict. Some rules need to be stricter."
7. "They keep things and people safe. They are good to have around. There should be more."
8. "Rules are made for a purpose. They are made for the protection of you or something. Rules are needed to direct our life."

Score 2

9. "I think some rules are very good but some of them are a little over done. They don't give you a free will to do some things you want to or have to do, to do your best. Some are very useful to us too."
10. "I feel that rules should be obeyed and that before they're made it should be discussed with the person who has to follow them, because sometimes they're just not fair to some people."

"What I think about rules..."

Score 2 (Contd.)

11. "I think rules are very important because people can't always do anything they want. Some rules though can be unfair and I think people should speak up and give their opinion. Rules are also important because of safety so I guess they're not all that bad."
12. "I think rules are very important, but sometimes it is better not to stick to them directly. That is, there are always exceptions. It is necessary to have rules, but too many of them take away personal freedom. Something which is essential to all of us."

Score 3

13. "Must be used to fit the situation - man made without penalties of law. Good to define parameters of situation. May be used for control of situation or persons - open to interpretation and change as no longer serve purpose(s) for which created."
14. "Rules, if they are not too restrictive of my abilities to make my own judgments when the situation warrants it, are okay. I don't need rules for every detail of my life."
15. "Rules are a necessity in a complex society such as ours. However, rules cannot be applied in the same manner for all circumstances. A change in circumstance could make much difference in how much or how strictly the rules should be adhered to."

RULES

Score .5: Like the 1 response there is some recognition that rules are necessary to maintain order. However there are still traces of 0 level negativism and hostility when rules interfere with egocentric needs and wishes.

Score 1.5: The response is similar to the 1 response in that the person describes rules according to their social acceptance (good-bad, right-wrong) and sees the value of rules in keeping things organized. However there is a beginning evaluation of rules but the criteria may be more egocentric or not as clearly defined as at the 2 level.

Score 2.5: A score of 2.5 may be given if the person evaluates both the situational applicability and/or impermanence of rules, and the effect of the rule upon others and himself, but he does not weigh these considerations to arrive at some conclusion or position about rules.

"What I think about rules..."

Score .5

16. "I think rules are getting in people's way of having fun. They should also be remembered. Rules are alright just so they don't knock out any or too much fun, and there isn't very many of them. I think that there really shouldn't be too many rules."

17. "I think rules are stupid, because the biggest portion of the rules get broken anyway so why make them, but in some cases it is very nice to have rules."

Score 1.5

18. "I think rules are very important. They make people do things right in the right way. Some rules seem to me awkward or they are strict. But people need them to live. Rules have to be made."

19. "I think rules are good to have. But when they go too far that's when they get me mad. Like 1 second late at school, and you get a detention."

"What I think about rules..."

Score 1.5 (Contd.)

20. "I think rules are needed in most places. If there weren't rules things would get out of hand. Some rules are not needed, like don't talk in class. I think you should be able to discuss things with your friends, not during tests but in class."

Score 2.5

21. "I have mixed feelings about rules. Obviously there are rules which are very necessary and we need them to run the country or anything else. There are however very unreasonable rules. Some rules of notifying parents of things when under age. In some areas rules should be loosened, in others, rules should be tightened. It depends on the specific rule and circumstance."
22. "I perceive rules as guidelines for behavior. Their necessity varies with the needs for structure of the group; as does their enforcement."
23. "Rules are made to protect people not always for safety but greed. People make up rules to protect themselves from maybe losing their position in a job. So some rules are made to be broken. Rules can help if they are for your own good like rules that protect people from injury. I disagree on rules that are made by one person. I think in some cases they should be made with the people they effect."

APPENDIX B

Teacher Development Instrumentation

and Scoring

TEACHER CONCERNS STATEMENT

Name Date Time: 10 minutes

The purpose of this form is to discover what teachers are concerned about at different points in their careers. With this information, teacher educators can include in teacher education what teachers feel they need.

WHEN YOU THINK ABOUT YOUR TEACHING, WHAT ARE YOU CONCERNED ABOUT? (Do not say what you think others are concerned about, but only what concerns you now.) Please be frank.

Do not write
in this space.

Please place a check by the thing that concerns you most.

OVERVIEW OF CONCERNS CODES

(Fuller, F. & Case, C. A Manual for Scoring the Teacher Concerns Statement, 1972, pp. 3-5.)

I. Concerns about Self

Code 0. Non-teaching Concerns

Statement contains information or concerns which are unrelated to teaching.

Codes 1 through 6 are always concerns with teaching. All other statements are Coded 0.

II. Concerns about Self as Teacher

Code 1. Where Do I Stand?

Concerns with orienting oneself to a teaching situation, i.e., psychological, social, and physical environment of the classroom, school and/or community. Concerns about supervisors, cooperating teachers, principal, parents. Concerns about evaluation, rules, or administrative policy, i.e., concern about authority figures and/or acceptance by them.

Code 2. How Adequate am I?

Concern about one's adequacy as a person and as a teacher. Concern about discipline and subject matter adequacy.

Code 3. How Do Pupils Feel About Me? What are Pupils Like?

Concern about personal, social, and emotional relationships with pupils. Concern about one's own feelings toward the teacher.

III. Concern about Pupils

Code 4. Are Pupils Learning What I'm Teaching?

Concern about whether pupils are learning material selected by the teacher. Concern about teaching methods which help pupils learn what is planned for them. Concern about evaluating pupil learning.

Code 5. Are Pupils Learning What They Need?

Concern about pupils' learning what they need as persons. Concern about teaching methods (and other factors) which influence that kind of learning.

Code 6. How Can I Improve Myself as a Teacher? (And Improve All That Influences Pupils?)

Concern with anything and everything which can contribute to the development not only of the pupils in the class, but of children generally. Concern with personal and professional development, ethics, educational issues, resources, community problems, and other events in or outside the classroom which influence pupil gain.

To summarize, Code 0 indicates that the teacher is not concerned about teaching. Codes 1 and 2 are basically self-oriented teaching concerns. Code 3 is transitional, but here the teacher's concern is already more pupil oriented. Finally, in Codes 4, 5, and 6, the teacher is definitely pupil oriented in a clear teacher-pupil relationship.

Illustrative Example

Code 4. Are Pupils Learning What I'm Teaching?

Concern about whether pupils are learning material selected by the teacher. Concern about teaching methods which help pupils learn what is planned for them. Concern about evaluating such learning.

Examples

Right now my chief concerns seem to be am I getting across to them?

The question still arises in my mind as to how well I have challenged my students.

I am most concerned with finding the most effective way to teach reading.

Will it hurt if you change a left handed child to right?

I want to present information in a manner to provide the greatest possible learning situation.

Individuals with a lot of potential, who are not using it, are my main concern.

I feel now that I can use ideas no matter where I find them so long as the student gets the effect.

I want to be sure they understand the fundamentals.

I had some real problems in the beginning with their handwriting. They could not write so that a human being could read it. I've been working about 15 minutes with each child trying to get the incomprehensible garble put down in some acceptable language.

I want them not only to understand what is said, but also to be able to apply what is said.

My concerns presently deal with finding out mutual areas of interest and ability so I am able to get new subjects and new concepts across to them. That is, I'm concerned with their understanding what I'm attempting to teach.

I'm more concerned now about the general things they learn rather than the facts. I am always behind on lesson plan schedules because I am not as concerned about getting everything covered and done. If there is a word or concept they don't understand, we stop and go over it. I realize more clearly now how little they know and how lacking their background is.

If I teach Spanish I'll be concerned about how to give my pupils a mixture of emphasis on speaking skills while learning grammar for reading the literature that reflects the cultural differences of Spanish-speaking people.

I worry about finding the means of presenting the material in such a manner that the maximum number of students can grasp it easily.

My desire is to have everyone understand the problem, idea, or whatever, before we move on to the next area. This is not always possible. I am troubled when I have presented a lesson and when I have finished I know no one benefited.

Playing each different instrument involves many different techniques and there are many ways to present each concept or technique to each individual.

I am concerned about being able to correctly and fairly assess the work of my students.

I am concerned that the students learn the objectives that have been set forth.

I want to make the subject alive and meaningful to the student so that he can learn.

I want to be open-minded in evaluating a student's artistic progress. I want to think, this is good, whether I like it or not.

(From Fuller and Case, 1972, pp. 21-23.)

APPENDIX C

Moral Judgment Interview

Moral Judgment Interview (MJI)

Questionnaire

Name

The purpose of these stories and questions is to get at your opinions and ideas. Please write down all the ideas or feelings they bring to mind rather than giving 'yes' or 'no' answers. Be sure to answer all questions.

In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had recently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid \$200 for the radium and charged \$2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about \$1,000, which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz gets desperate and considers breaking into the man's store to steal the drug for his wife.

1. Should Heinz steal the drug? Why or why not?

(Page 2 of test)

2. If Heinz doesn't love his wife, should he steal the drug for her?
Why or why not?
3. Suppose the person dying is not his wife but a stranger. Should Heinz steal the drug for the stranger? Why or why not?
4. What's to be said for obeying the law in this situation or in general?

(Page 3 of test)

5. Heinz might think it's important to obey the law and to save his wife, but he can't do both. Is there a way to resolve the conflict between law and life, taking the best arguments for both into account? How or why not?

(Page 4 of test)

Heinz did break into the store and get the drug. Watching from a distance was an off-duty police officer, Mr. Brown, who lived in the same town as Heinz and knew the situation Heinz was in. Mr. Brown ran over to try to stop Heinz, but Heinz was gone by the time Mr. Brown reached the store. Mr. Brown wonders whether he should look for Heinz and arrest him.

1. Should Mr. Brown, the off-duty policeman, arrest Heinz? Why or why not?
2. Mr. Brown finds and arrests Heinz. Heinz is brought to court and found guilty. Should the judge sentence Heinz or let him go free? Why?

(Page 5 of test)

3. The judge has to think about society. Thinking in terms of society, what is the best reason for the judge to give Heinz a sentence?
- 3a. If you disagree with this reason, why?
4. Why is it important generally to punish people who break the law?

(Page 6 of test)

5. If you had to make a decision about whether to steal the drug, how would your conscience enter into the decision?

6. Is Heinz's problem a moral problem? What makes something a moral problem?

(Page 7 of test)

7. Heinz's problem involves the law, it involves his feelings, and it involves his thinking or reasoning about right and wrong. How should these things enter into a decision about moral problems?
8. Some people would say there is a morally right choice in problems like this. Others would say the choice is arbitrary, it's a matter of personal opinion. Can moral decisions like this be more than a matter of personal opinion? If so, how? If not, why not?

APPENDIX D

The Reflective Index, Cognitive Levels and Activities

THE REFLECTIVE INDEX

Criteria for the Coding of Lesson Protocols

(Excerpted from B. Joyce and B. Harootunian, Manual for Analyzing the Oral Communications of Teachers, 1972: The System of Coding--The Handling of Information, pp. 229, 234-237.)

The System of Coding

A unit of communication is defined as one oral communication by a teacher on one topic and to one audience . . .

The Handling of Information

A communication should be classified informational whenever the teacher is presenting facts or ideas or demonstrating or explaining some skill or whenever he is inducing the students to give information, collect facts, develop ideas, or practice some skill. In the first two subcategories (I-1 and I-2) the teacher tries to encourage a student to form an opinion, develop an idea, and work on data for himself. In the last three categories (I-3, I-4, and I-5) the teacher controls the development of ideas and the ways in which they are explored.

I-1: Helping Students to Theorize. The teacher tries to get the students to assume responsibility for doing the thinking in class. Thus he encourages them to collect data, raise hypotheses, make inferences, evaluate information, and define or advance problems. The study involved may range from pursuing an explanation of a scientific event to appraising the qualities of a piece of literature or a work of art. Very often the students are asked to defend or justify a position or judgment:

"Do you agree with Alfred's conclusion?"

"Why?" (following a previous question or statement)

"In his position, how would you feel?"

"Can you imagine how the play would be different if the soldiers were from the South rather than from the North?"

"What evidence is there that this is not a true story?"

"Suppose you had lived in those days. How would your life be different from what it is now?"

"What do you think made the fluid turn blue?"

I-2: Helping Students Toward Self-Expression. The teacher asks a student to express himself creatively or originally in writing, music, or art, or asks him for some opinion on an issue for which there are no precise answers. The teacher, however, does not demand that the student justify

his opinion or creation (rigorous justifications are reserved for subcategory I-1):

"Why not write a story based on your experiences?"

"Which among the European nations seem friendliest toward America?"

"What are some other ways of saying this?"

"Who did the problem another way?"

"What will our main character do next?"

I-3: Questioning Students for Precise Answers. In questioning a student, the teacher here is usually seeking but one possible answer, one requiring no analysis, hypothesis, or justification. The student is merely asked to retrieve some memorized fact or idea or to recall some observation. Sometimes the observer recording the teacher's communication must draw a line between an informational statement of this type and a procedural statement; for instance, the statement "Sing the song" would be informational (I-3) if the teacher were seeking an accurate recitation but would be procedural (P-3) if the teacher were simply getting an activity under way. (In this subcategory the observer records an R on the coding grid whenever the teacher repeats his question--usually because the student initially questioned failed to answer correctly.) Examples:

"What did the book say were the three major causes of the American Revolution?"

"When did Caesar live?"

"Tell me the rhyme scheme of the Shakespearean sonnet."

"What did you see at the zoo?"

"Recite the poem from memory."

"Define the concept 'balance of power'."

I-4: Delivering Information. The teacher gives information or demonstrates or describes a skill. The kind of information he delivers comprises either data ("Voltaire and Rousseau both died in 1778." "The gas is helium") or relatively stable theory or knowledge in Joseph J. Schwab's sense ("Kangaroos are mammals." "Genes are molecules that transmit hereditary characteristics"). In this subcategory the teacher can be reading stories, poems, or passages from a book; or he can be lecturing, demonstrating, or showing a film and commenting on it. From the observer's point of view, the teacher's information or demonstration may be good or poor, but this is irrelevant. Sometimes this informational subcategory borders closely on the procedural category P-3; for instance, telling a student to read from the encyclopedia would be procedural, whereas telling him how to locate an article in an encyclopedia would be informational, in that it would be an explanation of a skill. (In this subcategory the observer records an R on

the coding grid whenever the teacher repeats a statement made by a student.) Examples:

"The square root of 121 is 11."

"True, John, fish are vertebrates but not mammals." (This information, echoing a student's statement, is recorded as an R or repeat.)

"The war ended in 1865."

"The rhyme scheme of the Shakespearean sonnet is abab cdcd efef gg."

"We always wear overshoes when it rains." (given as a statement of fact rather than as a direction or sanction)

I-5: Giving Conclusions. The teacher delivers an opinion or conclusion, states a criterion or a measure of evaluation, or defines an issue or problem. Unlike subcategory I-4, this subcategory involves more fluid knowledge in Joseph J. Schwab's sense or even the teacher's personal judgment or point of view. Contrary to subcategory I-1, in this subcategory the teacher, not the student, is doing the original thinking. He is doing all the analyzing, synthesizing, hypothesizing, and evaluating.

Examples:

"The five causes of the war were . . . "

"This experiment will prove that . . . "

"The Japanese I met in Tokyo were always . . . "

"The best way I know is to . . . "

Joyce, Weil, & Wald: Cognitive Levels and Activities

Cognitive Levels

Cognitive Activities

Factual

Recalling information
Recognizing or identifying information
Gathering or enumerating data
Translating information into one's own words

Conceptual

Building categories and forming concepts
Generating examples of concepts
Comparing and contrasting
Making inferences about cause and effect

Theoretical

Developing a principle or generalization, as in interpreting or explaining data
Testing a hypothesis
Making predictions
Making value judgments based on criteria or developing criteria

From Basic Teaching Skills by Bruce R. Joyce, Marsha Weil, and Rhoada Wald, p. 51, 1972, Science Research Associates, Inc.

Description of Levels:

The Factual Level. The cognitive processes at this level are recalling, identifying, enumerating, describing, and translating information from one medium or mode to another (e.g., written to spoken, iconic to symbolic). The assumption is that data are not manipulated, interrelated or transformed in any way at this level, but are given or used as given.

The Conceptual Level. Cognitive processes at this level are those which interrelate pieces of data in order to compare and/or contrast, to draw cause-effect inferences, to interpret data (for example, what the shape of a curve means, what the implications of an author's symbolism are), to apply what is given of general knowledge to a problem-solving situation, and to form concepts.

The Theoretical Level. This is the level at which concepts and facts are generalized and synthesized into a larger theoretical structure (how the concept of international economic interdependence relates

to the workings of a capitalist economy), and at which problems are creatively or synthetically solved. Other cognitive activities at this level include hypothesizing, developing criteria, and making judgments of value ("good" or "bad", "important" or "trivial", e.g., in literature, political policy, ethics), and the creative process (e.g., writing original poetry, composing a piece of music, designing an experimental study). In all of this, it is assumed that the thinker has taken data given or remembered and manipulated and transformed them to the point at which theoretical structures become the focus, rather than the actual facts.

From Manual for Interaction Analysis, a mimeo forwarded by B. Joyce, December, 1976.

Coded Sample from a Lesson Protocol

Grade 5 class, Social Studies: Ontario. The lesson begins with a review of the geographical divisions and features of Canada, proceeds to a discussion of the industrial features of Ontario, and concludes with a debate re justification of Ontario's right to vast industry.

(The following excerpt is from the beginning of the lesson.)

- T: . . . Who remembers some of the land form regions--the different land structures that we'll find in Canada?. . . Biata--Can you name one of them? (3)
- S: The Canadian Shield
- T: The Canadian Shield. Right. (R) Can you locate the Canadian Shield for us? (3)
- T: OK--It goes a little further over though, doesn't it?--Can you just--you're showing me--right--Not too much of Alberta, though, is there?--Just a little corner--right--just a little eastern corner of Alberta, right? (4) OK, Northern Ontario and what other provinces is it going to cover?--Part of northern ? (3)
- S: (Inaudible response)
- T: Part of northern Quebec. Good. (R) The Canadian Shield that covers a good portion of Canada. (4) What kind of land are we going to find in the Canadian Shield?--Dianne? (2)
- S: Rocky
- T: Rocky land. (R) Anything else will you find in the Canadian Shield besides rock?--Sherry? (2)
- S: Forests
- T: A lot of forests, right. (R) So then what kind of industries will we find in the Canadian Shield?--Norman? (2)
- S: Lumbering
- T: A lot of lumbering (R) and what else?--Cynthia? (2)
- S: Pulp and paper
- T: Pulp and paper. Right. (R) Anything else with lots of rock?--What else are we going to find?--Leslie? (2)
- S: (Inaudible response)
- T: Building furniture from the wood products--that's right! (R) OK, Patty? (2)
- S: Mining
- T: Mining. Right--So we're going to find a lot of mining industry being carried on there. (R) OK. We've had the Canadian Shield, what's another land form?--Tom? (3)
- S: Appalachian region
- T: Appalachian region. (R) Could you locate it for me on that chalk map of Canada, please? (3)
- . . . (from the concluding section)
- T: Now going back to the fact that many people say: Why should Ontario have all those industries and Manitoba so few and Saskatchewan so few? Uh--Who would like to take the part of Ontario and say: Well, we're entitled to these industries. Who can give me some rationale, some argument for the fact that they should have as many industries as they have down there?--You're going to justify--you're going to say why it is that Ontario should have all those industries. (1)

CODING GRID

Information

	1	2	3	4	5
Teacher communications designed to stimulate/elicit					
Student theorizing			✓		
Student conceptualizing/ expressing him/herself				R	
Teacher questions			✓		
Teacher informs				✓	
Teacher concludes					
				R	
				✓	
		✓			
				R	
		✓			
				R	
		✓			
				R	
		✓			
				R	
		✓			
				R	
			✓		
				R	
			✓		
	✓				
Total	1	6	5	11	0

$$RI = \frac{1+2}{T_n} \times 100$$
$$= 30.4$$

APPENDIX E

Participant Registration Forms, Program Information,

Concluding Forms

RESEARCH PROGRAM REGISTRATION FORM*

FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL
PSYCHOLOGY
TELEPHONE (403) 432-5245



THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA
T6G 2G5

TEACHER ENRICHMENT EXPERIENCE

Director: Joyce B. Krysowaty

Participant Registration Form

Name Surname Given name

Teaching Position School Grade

School Phone No. Home Phone No.

Home Address

Teacher Training (in years) Teaching Experience (years)

Age Do you plan to teach next year? Yes No

*For the comparison group the title read: Teacher Research Program

A TEACHER ENRICHMENT EXPERIENCE

Overview of the Program

Discussion and effort will center around the following components:

- I. Three basic dimensions in interaction: Students, Objectives, and Methodology
Focus: Your students Integrating theme: learning style
- II. Examination of different credible models and strategies of teaching and selection of models to master.
Question: How does your idiosyncratic model relate to other models?
Focus: Trying out selected models and evaluating them
- III. Putting 'it' together as your unique style, for your students, for the desired purposes.
- IV. Learning centers and contracting in the elementary school.
- V. Extension of teacher interests and competencies through provision of relevant literature from the University Library.

Addendum: Teacher Research Program*

Are you presently engaged in University course study or have you been so engaged at any time within the past three years? Yes No (Circle)

If relevant, could you list experiences that you have had during the course of the school year that you believe have had an impact upon you (e.g. courses, travel, birth of a child, divorce, difficult teaching assignment, etc.).

.
.

Would you indicate with a check (✓) which of the following you think best describes the environment in which you work.

- (a) ☐ Tremendous
☐ Moderate press for 'withitness', practice of quality innovation.
☐ Minimal
☐ No
- (b) ☐ Tremendous
☐ Moderate support for 'withitness', innovation.
☐ Minimal
☐ No

Thank you very much for your cooperation in the study. All individual information is confidential. You will be informed of the results of your questionnaires and the study when they become available.

*Comparison group form

APPENDIX F

Supplemental Tables (Analyses)

Table 72

Norms for Learning Style--Adult Sample

Percent of Persons Requiring
Differing Degrees of Structure

n	Sample	Year	Mean CL3	Much (.5-1.0)	Some (1.2-1.4)	Less (1.5-1.9)	Little (2.0+)
50	Community College	1975	2.03	0	12	34	54
53	University Students	1970	1.96	2	9	32	57
73	University Students	1973	1.65	6	16	56	22
20	University Students	1974	1.76	5	20	25	50
71	University Students	1974	1.78	1	17	40	42
58	University Students	1975	1.86	20	25	29	26
59	University Students	1975	1.72	2	22	44	32
138	University Students	1976	1.63	7	27	41	25
32	University Students	1976	2.05	0	14	30	56
82	University Students	1976	1.82	2	15	39	44
57	Teacher Trainees	1972	1.55	5	30	54	11
60	Teacher Trainees	1972	1.82	3	13	30	54
57	Teacher Trainees	1975	1.78	5	16	37	42
91	Graduate Students	1972	1.85	1	17	36	46
43	Graduate Students	1974	1.93	0	14	30	56
60	Graduate Students	1975	1.82	3	18	32	47
143	Alcoholics in Treatment	1974	1.53	20	25	29	26

Source: Hunt, Butler, Noy, & Rosser (1977) p. 41.

Table 73

CORRELATION MATRICES FOR ALL VARIABLES

A. Program Group (T1)

	2	3	4	5	6	7	8	9	10	11
1 PC Pre	.525***	.742***	.112	.386*	-.136	.273	-.135	.080	-.186	.421*
2 PC Post		.911***	.011	.015	.089	.092	-.041	-.040	-.068	.225
3 PC Adj. Post			-.016	.156	.036	.136	-.079	-.058	-.101	.344
4 TC Pre				.255	.087	-.160	-.016	.276	.226	.221
5 TC Post					.113	.010	.131	.284	.244	.255
6 Age						-.315	.793***	.156	.347	-.218
7 Teacher Training							-.221	-.204	-.629***	.430*
8 Teacher Experience								.216	.230	-.302
9 RI Pre									-.406*	.344
10 RI Post										-.047
11 MJ										

* p<.05
** p<.01
*** p<.001

B. Comparison Group (T₂)

	2	3	4	5	6	7	8
1 PC Pre	.325	.325	.431	.354	-.008	.467*	-.131
2 PC Post		1.000	.176	-.060	-.345	.192	-.173
3 PC Adj. Post			.176	-.060	-.345	.192	-.173
4 TC Pre				.665***	-.000	.249	.087
5 TC Post					-.219	.087	-.286
6 Age						-.293	.843***
7 Teacher Training							-.291
8 Teacher Experience							

*p<.05

***p<.001

C. Joint Group (T₁+T₂)

1 PC Pre	.477***	.642***	.223	.382**	-.112	.343**	-.140
2 PC Post		.934***	.121	.031	-.070	.181	-.099
3 PC Adj. Post			.086	.131	-.093	.194	-.120
4 TC Pre				.361**	.038	.020	-.022
5 TC Post					.026	.042	.023
6 Age						-.320*	.809***
7 Teacher Training							-.253
8 Teacher Experience							

*p<.05

**p<.01

***p<.001

Table 74

Summary of Two-way Analysis of Variance:
Treatment Group by PC Pre-Adjusted Post

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.835	.835	1	2.915	
Error	15.723	.297	53		
Within subjects					
Pre-adjusted post	3.013	3.013	1	48.181	.0000004
Treatment group x Pre-adj. post	.178	.178	1	2.854	
Error	14.888	.286	52		

Table 75

Summary of Two-way Analyses of Variance:
 CL Groups (Non-zero Ss) on TC Pre-Post for Each Treatment Group Separately

Source	S.S.	M.S.	D.F.	F	p
<u>T₁</u>					
Between subjects					
CL groups	2.182	.727	3	.539	
Error	32.354	1.348	24		
Within subjects					
Pre-post	5.533	5.533	1	11.163	.0027
CL group x Pre-post	1.860	.620	3	1.251	
Error	11.895	.496	24		
<u>T₂</u>					
Between subjects					
CL groups	7.351	2.450	3	1.488	
Error	24.705	1.647	15		
Within subjects					
Pre-post	.105	.105	1	.165	
CL group x Pre-post	.142	.047	3	.075	
Error	9.505	.634	15		

Table 76

Summary of Three-way Analysis of Variance:

Treatment Groups by CL Groups on TC Pre-Post (Non-zero Ss)

Source	S.S.	M.S.	D.F.	F	p
Between subjects					
Treatment groups	.0375684	.0375684	1	.0257	
CL groups	5.553262	1.84421	3	1.2605	
Treatment group x CL group	3.40222	1.13407	3	.77514	
Error	57.059	1.46305	39		
Within subjects					
Pre-post	1.25641	1.25641	1	2.2898	
Treatment group x Pre-post	2.70730	2.70730	1	4.9339	.05
CL group x Pre-post	.632696	.210899	3	.3844	
Treatment group x CL group x Pre-post	1.04563	.348543	3	.6352	
Error	21.400	.5487179	39		

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